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The effectiveness of special service programs on the academic performance of minority students in higher education : a longitudinal study.

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THE EFFECTIVENESS OF SPECIAL SERVICE PROGRAMS ON THE ACADEMIC PERFORMANCE OF MINORITY STUDENTS IN HIGHER EDUCATION: A LONGITUDINAL STUDY

A Dissertation Presented

By

Pearl Leanna Clay

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DEDICATION

This work is dedicated to my father John H. Clay, Sr., my mother Sadie Lee Clay, my brother John H. Clay, Jr. and to my son Adam Clay Sinder whose love and support have helped to make this dream a reality.

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Finally and fundamentally, I want to thank my father and mother. Their high regard for education set the tone for my academic pursuits.

ABSTRACT

THE EFFECTIVENESS OF SPECIAL SERVICE PROGRAMS ON THE ACADEMIC PERFORMANCE OF MINORITY STUDENTS IN HIGHER EDUCATION: A LONGITUDINAL STUDY

Pearl Leanna Clay

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The purpose of this dissertation was to investigate the relationship between special service programs for minority students in higher education (i.e., counseling, tutoring, special courses) and measures of academic performance and survival (i.e., retention rates). Subjects in this study were 213 financial aid minority freshman students enrolled in the Committee for the Collegiate Education of Black Students Program (CCEBS Program) at the University of Massachusetts at Amherst, for the academic years 1975 and 1976. Traditional moderator variables (age, sex, high school rank, high school class size, type of high school, in-out of state, SAT scores, verbal and math scores) were examined to determine if they could also be used as predictors of minority student's academic success in higher education. The dependent variables for academic performance and retention rates were tallied from credits attempted, credits earned, credit ratio, grade point

average, cumulative grade point average. The study examined relationships among entering characteristics of financial aid minority freshman students enrolled in the CCEBS Program, various program intervention variables (tutoring, counseling, and special courses) and measures of academic success and survival.

The study identified several lines of inquiry. Because of the unavailability of complete data on some of the varialbes used in the study, some desirable analyses were not feasible. Although the data available did not permit identifying the more causal relationships between intervention efforts and academic success, the value of formal counseling and tutoring was strongly indicated. Case trends were identified and documented for counseling and tutoring of disadvantaged students who by all traditional predictors (SAT scores and high school percentile), would not succeed. Significant exceptions to the more traditional predictors were found wherein the traditionally labeled "unsuccessful applicants," with help from supportive services, performed above average.

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C H A P T E R I

INTRODUCTION

The admission of ethnic minority students who have previously been socially, economically and/or academically unable to pursue higher education has been one of the more controversial and emotional issues in education in recent years. The report of the New York State Regents (1975) states,

> We assume that persons of the various ethnic and racial groups in our society aspire to and are capable of obtaining all the various levels of educational achievement in approximately the same proportions. Such is not the case because social conditions have made the attainment of these various levels more difficult for some sectors of the population. (p. 10).

It seems logical in this democratic society that the elimination of this unjust situation should be one of the nation's greatest concerns.

In some measure society has responded, perhaps nowhere more effectively than in our nation's educational systems, by removing some of the legal barriers that have been in existence for so long. A study done by Davis and others, (1975) states that the tenor of compliance requests made on many colleges and universities in the last several years by the Office of Civil Rights, USOE, may have created a kind of legal advocacy situation. The new breed of community

colleges burgeoning and ubiquitous, seems to be relatively effective (Willingham, 1970a, b) in removing barriers of cost and geographic accessibility.

During the 1960's, other barriers were lifted with the acceptance of the concept of programmatic support for minorities in higher education. Also, a number of programs aimed ultimately at the goal of equalizing opportunity among individuals of differing social backgrounds began to appear. These programs facilitate the educational process in a manner designed to enrich the educational experiences of minority students, and thereby enhance the probability that their educational performance and attainments would equal that of other students of similar ability but different social backgrounds. Programs like the College Discovery and Development Project (New York City, 1964); the Higher Education Act of 1965 (providing for the Educational Opportunity Grants Programs (EOG)); the Search for Education, Elevation and Knowledge (New York State, 1966); the Higher Education Amendments of 1968 (this provides for the Special Service Programs); and Higher Education Opportunity Programs are all designed to increase the access and success of individual's economically and/or academically unable to pursue higher education.

During the late 60's through the 70's, the increasing population of minorities in colleges and universities

as the result of special service programs has given rise to the following questions regarding the effectiveness of such programs:

1. What impact do special service programs have on the academic performance of designated minority students?
2. Are special service programs designed for minority students the influencing factor for their college success?
3. Are special service programs essential for increasing the enrollment of minority college students?
4. Are special service programs worth the time and money invested?

Although these special programs have been in operation for many years, there is still much needed information regarding their collective impact on the students they serve. Early reports dealing with special programs and their effectiveness tended to be more descriptive than empirical (Davis and others 1975). Bayer and Boruch (1969) and Williams (1969) present questions and suggest ways to gauge the effectiveness of special service programs. Wisdom and Shaw (1969) suggest ways for actualizing special service

programs. The Walz, Krovas, and Wert study (1971) developed a good review of a variety of experiences in providing services to minority students. Etzioni (1971) reviewed the findings of about 150 studies of special service programs and concluded that "...evaluating the effects and benefits of this approach is an extremely difficult undertaking."

More recent investigative studies likewise concluded that our knowledge about the condition of special service programs is confused and that "the status of these programs is going to be influenced by the extent to which we can produce solid data about their nature and effect" (Gordon and Fahrer, 1976). The value of such programs, however, can only be demonstrated by means of more extensive evaluative studies than those already conducted to determine the effectiveness of special service programs (Sedlacek and Clark, 1976).

Despite the fact that the evaluation studies regarding the state of special service programs are few, there are indications that the success of the non-traditional minority student in colleges and universities might well be enhanced by full systems special service programs (New York State Department of Education, 1975; Rossmann, 1975; Baehr, 1969; Bridge, 1970; Christensen, 1971; Smith, 1972) In 1966, a group of concerned Black faculty and staff at the University of Massachusetts conceived the Committee for the

Collegiate Education of Black Students (CCEBS). It was September, 1968, when the first CCEBS class was enrolled. The program was developed as an agent for recruiting and assisting Black, Spanish-speaking, and low income students in gaining entrance and matriculating towards a degree by providing all systems of direct support. CCEBS' central thrust has concentrated on designing structures and policies that will enhance a student's academic success in higher education and a smooth social transition to University life.

Three components represent the core of the CCEBS program: Academic Services, Personal Counseling, and Graduate and Career Counseling. These components also provide for: financial aid, counseling (academic and personal), tutorial support, special courses, adjusted curriculum (in which the students' special needs are taken into account in planning course work), and social and psychological support. Similar program designs have been cited by Gordon (1976); New York State Department of Education (1975); Davis and others (1975); McDill (1969); and Bryson and Bardo (1979).

The major focus of this present study is the Academic Services and Personal Counseling components. Specifically, the Academic Services component assists CCEBS students in scheduling and course selection, interpreting academic policies, providing tutorial assistance, and reviewing

and advising students on matters essential to their academic records.

The Personal Counseling component encourages CCEBS students to become involved in existing campus organizations as well as the variety of activities the program sponsors to aid in their social adjustments. Information is disseminated through Dorm Organizers (CCEBS upper classmen/women who live in dormitories) to keep students informed about program matters and University affairs. This system attempted to create a social atomosphere that is comfortable and non-alienating.

The prime CCEBS program objectives are:*

1. Recruiting and admitting educationally disadvantaged minority students to the University of Massachusetts.
2. Helping students succeed academically at the University.
3. Creating a new outlook on life (i.e., helping minority students realize that someone is interested in them and genuinely eager to open new opportunities.
4. Ministering to the academic, psychological, and social needs of minority students at the University of Massachusetts.

*From CCEBS Research Component, 1969

Nature and Scope of the Problem

In light of preceeding research, it is clear that there is a shortage of data dealing with the effects of support services for disadvantaged college students. It is certainly not a new observation that many minority students entering college have contrasting backgrounds and experiences from mainstream middle-class Americans that may affect their readiness for the traditional demands of college life. Particularly during the period of late 1960's and 1970's, these issues surfaced. A variety of historical accounts document the extent to which the colleges and universities continue to be challenged by their failure to provide for the more specialized educational needs of these college students. However, failures in the past pale in comparison with our recent institutional neglect and the devastating consequences both for the students and for the society at large. Today, the success of the disadvantaged college student has become a revitalized concern of college administrators.

Therefore, this dissertation research will investigate the relationship between support services for disadvantaged college students and measures of success in college. Three major topics will be considered:

1. Academic performance of students in the CCEBS program.
2. Retention as related to academic performance for students in the CCEBS program.
3. The impact of special service programs (counseling, tutoring and special courses) upon retention and academic performance.

Analyses will be based on the following independent and moderator variables: 1) tutoring; 2) counseling; 3) special courses; 4) SAT verbal scores; 5) SAT mathematics scores; 6) high school percentile rank, high school classification, and high school location (in state/out of state);7) sex; and 8) age.

Significance of the Problem

A study involving the effects of special service programs for minority students in higher education seems worthy of investigation for the following reasons:

1. The proposed study will contribute to the existing body of knowledge in that its data will assist in explaining the nature and the effectiveness of special service programs.
2. The results of this study will provide special service program administrators with data to assist in the restructuring of programmatic factors related to the improved probability of minority student survival and success

in the academic environment.

3. It is intended that the data will provide university curriculum policy committees with suggestive insights as to ways to enhance the academic performance of university minority students.
4. The study will also provide recommendations for further research in the area of special service programs for minority college students.

Population

The population for this study consists of 213 minority students who matriculated in the Committee for the Collegiate Education of Black Students Program (CCEBS Program) at the University of Massachusetts at Amherst in either Fall 1975 or Fall 1976. These students received 1) financial assistance, and 2) other support services at the University of Massachusetts at Amherst during the period of September, 1975, through June of 1977. Students' financial assistance in order to attend college varied depending on financial need. Designated students are in-state, out-of-state, rural and urban. All students must have met the admission requirements of the University of Massachusetts; that is, they are graduates of accredited high schools and have taken the College Board Scholarship Aptitude Test (SAT).

Definitions of Terms

1. CCEBS: Committee for the Collegiate Education of Black Students
2. Support Services:
   - A. Tutoring: Free tutoring for all CCEBS students available throughout their college careers.
   - B. Financial Assistance (Aid): Students are awarded funds to attend college according to their needs:
     1. Educational Opportunity Grant (EOG)
     2. National Direct Student Loan (NDSL)
     3. College Work-Study Program (CW-SP)
   - C. Counseling: A CCEBS counselor is assigned to each student. Counseling includes academic and personal counseling.
3. Special Courses: Fundamental skill enrichment courses that are either highly recommended to all freshmen and some sophomores, or they are mandatory within the CCEBS Program.
4. Special Service Programs: Supportive programs created and designed specifically for the support of minorities in higher education.

5. Disadvantaged Student/Youth: "Those who are the products of a culture that has not provided them with the motivations, opportunities, experiences, and relationships that will enhance their chances for competing successfully with their fellow citizens in all phases of life." (Amos and Grambs, 1969).

6. Minority/Minorities/Ethnic Minorities: For the purpose of this study, the researcher has used the terms 'Minority' and 'Disadvantaged' interchangeably to refer to Blacks, Chicanos, Puerto Ricans, Native Americans, Asians, and others.

7. Academic Success: Those aspects of student performance which are necessary for graduation. and quantified according to the following measures:

    A. Grade Point Average: All analyses of grade point average classify students according to whether they earned a 2.00 or better (on a 4.00 scale). It is strategic to use the 2.00 grade point average, since this is the minimum required for graduation.

    B. Credit Generation: Students are classified according to whether they earned 24 or more credits over their first year for the class of 1979, and 48 or more credits over their first two years for the class of 1980.

C. Credit Ratio: This measure is the proportion of credits earned to credits attempted. A student who registered for 12 credits in a given semester and who earned 12 credits would have a credit ratio of 1.00. A student who attempted 12 credits and who earned 9 would have a credit ratio of .75. For this study, success is defined as a student who earns 75% of credits attempted.

D. G.P.A. plus Credit Generation: The successful student is one who has, at the end of two semesters, earned (at least) both 24 credits and a 2.00 grade point average for the class of 1979. For the class of 1980, the successful student is one who has, at the end of four semesters, earned (at least) both 48 credits and a 2.00 grade point average.

8. Longitudinal Study: All data collected for this study will span a two year period; i.e., for the class of 1979, collected data covers the first two years or semesters. For the Class of 1980, collected data covers the first year or the first two semesters.

Organization of the Remainder of this Dissertation

Having provided the reader with a thematic introduction to this dissertation, a brief chapter by chapter perspectus will follow. Chapter II will review the specific aspects of the literature deemed to be of the greatest relevance for this study under consideration. The review of the literature for this research will give emphasis to the areas which the researcher feels are most pertinent to an understanding of how support services affect college students. A discussion of the instruments used in this study, their background, reliability, and validity will be included as a part of Chapter III, "Methodology and Procedures." Chapter IV will contain the findings and reports obtained from an analysis of the statistical data. Chapter V, the concluding chapter, will contain a summary of the findings, conclusions, recommendations for subsequent research, and limitations of this study.

C H A P T E R II

REVIEW OF RELATED LITERATURE

In reviewing the literature that is related to special service programs, several aspects are considered: 1) definitions and concepts, 2) admissions, and 3) special services (i.e., counseling, tutoring and instructional support). To develop a conceptual framework for special service programs, first, one must define the target population (this will generally be referred to as disadvantaged students). Secondly, one must look at the research that is concerned with the problems and issues of the target populations in relation to special service programs.

One of the first identifying labels for special programs is that of low-income, which includes disproportionately large numbers of racial and ethnic minorities; Black, Chicano, Puerto Rican, Native American, Asian, and others. The problems and needs they have in maintaining themselves in college as a reflection of their cultural backgrounds are unique for each group. This research is concerned with minorities in higher education as well as the poor (David and others, 1975).

In 1965, Congress passed the Higher Education Act establishing Educational Opportunity Grants Programs;

by 1968, Congress had also passed the Higher Education Act establishing Special Service Programs. Each of these Acts passed by Congress provided millions of dollars for the education of disadvantaged students. In these Acts, the Federal government defines 'disadvantaged' on the basis of a legalistic application of the National Poverty Classification (Egerton, 1968a, pp. 3-4).

> The terms 'high risk' and 'disadvantaged' are used interchangeably to designate students whose lack of money, low standardized test scores, erratic high school records and race/class/cultural characteristics, taken together, place them at a disadvantage in competition with the preponderant mass of students in the colleges they wish to enter. They are students who are long-shot prospects for success, but who demonstrate some indefinable and unmeasurable quality - motivation, creativity, resilience, leadership, personality or whatever - which an admission officer might interpret as a sign of strength offsetting the customary indicators of success.

Other writers in the field (who usually support the idea that race alone does not make one disadvantaged) also argue that a combination of factors work together to cause disadvantagement, including cultural impoverishment, inferior education, poverty, and minority group membership (Williams, 1969; Green, 1969).

In the last decade, three major social science perspectives on minority group cultures have been developed that help explain why minority or poverty groups have difficulty in conventional education programs. The

first group of social scientists place the blame on the constriction of the minority by the majority culture. Examples of this theoretical position are Amos and Grambs (1968), who define the culturally disadvantaged as "...those who are the products of a culture that has not provided them with motivations, opportunities, experiences, and relationships that will enhance their chances of competing successfully with their fellow citizens in all phases of life. Williams (1970) likewise attributes a prejudicial society as the cause for the target population's failure. Williams explains the "cultural difference" theory in this way:

> ...the differences noted by psychologists in intelligence testing, family and social organizations and the studies of the Black community are not the result of pathology, faulty learning, or genetic inferiority ...(but) are manifestations of a viable and well-delineated culture of the Black American (Williams, 1970, p. 65).

Clark (1969) has a similar point of view and argues that the learning difficulties of minorities is a function of: "...the total pattern of racial prejudice, discrimination, and degradation found in a racist society... (which) blocks the capacity of school personnel to teach minority group children with the same observable efficiency as that given other children (Clark, 1969, p. 60).

This same interpretation is supported by C. A. Stone and others who propose the term 'disequalized' in place of 'disadvantaged.' In addition, they attribute the observable deficits as a function of punitive or discriminatory pressures that are exerted on the minority individual by the majority rather than as a function of the simple inability of the individual members of minorities or of minority cultural deficiencies (Stone, 1973; Davis and others, 1975). In contrast, the second group of social science researchers (Bressler, 1967; Reissman, 1962), emphasize the positive characteristics of minority group cultures. For example, Reissman (1962) supports this position by stressing the need to document positive minority culture characteristics in order to eradicate the negative views prevalent among teachers and social workers who deal with members of these poverty cultures.

The third group of social science researchers, highlighted by the work of Kenneth Johnson (1970), theorizes simply that a person who is culturally deprived is only disadvantaged in some cultural systems, but not necessarily in all systems. Therefore, the nature of the system in which one is disadvantaged must be specified. He further suggests that minorities may progress in a conventional educational environment if parts of it are modified enough that the behavior styles, success patterns, and some of

the values of the cultural minority can be accommodated and enlisted (Davis and others, 1975).

Admissions

The tremendous increase of minorities entering universities and colleges in the late 1960's and early 1970's across the nation was a direct reflection of changes in our society. It also stands to reason that the number of entering minority freshmen in colleges and universities was a good indication of society's efforts to eliminate institutional racism throughout our society, and especially in higher education (Sedlacek, Brooks and Mindus, 1973). For a six year span, from 1964 to 1970, during which time our society was going through a period of unrest, the number of non-whites enrolled in higher education doubled (Berls, unpublished report).

During the 1960's, one prime result of the social unrest was an increased or hyper-awareness by educators, administrators, and other para-professionals, of the special needs of disadvantaged ethnic minority students in general, and of black students particularly. Standardized measures placed many minority student's academic achievements well below grade level. Many factors, such as inferior schools, poor home learning environments, and inadequate study-skill preparations, combined to create this unexceptable condition. A flood of special educational support programs

under a variety of program names were initiated for educationally deprived students who met the initial admission requirements and wanted to attend college. The universal premise seemed to be that if the elementary academic skill levels of the special student were increased, then the net result would be an increased ability to achieve and persist in college. A very important factor to be considered in the overall scheme during the 1960's was the low incidence of Black and other minority students in many colleges and universities. Many administrators welcomed special programs as a way of increasing minority enrollments.

Numerous, over zealous institutions of higher education, in their rush to increase minority enrollment, revised admission standards, initiated special recruitment programs and implemented many expanded support programs. The major directive was to get something started. Inadequate planning, preparation, and resources were justified on the grounds of expediency. Therefore, some very marginal programs are still unable to adequately explain or discuss reasons for their successes or failures.

It was concluded from an investigation of predominantly white universities involved in recruiting and providing special academic services to Black students that, "as efforts are being made to eliminate insitutional racism throughout our society, and in particular in our educational system, it

is important that we are not lulled into a false sense of change by the bally hoo and good intentions known by many. Results, not intentions, should be the yardstick of progress" (Sedlacek, Brooks and Mindus, 1973, p. 16).

The number of minority students obtaining access into colleges and universities reflects the admission policies of the predictors used in admitting such students. The sole use of traditional predictors of college success, high school achievement records and SAT scores, has been questioned (Gordon, 1965; Kendrick, 1968; Society, 1964). The issue of the cultural fairness of commonly used predictors has also been widely studied and discussed (Thomas and Stanley, 1969; Pfeifer and Sedlacek, 1971; Sampel and Syemour, 1971; DiCesare, Sedlacek and Brooks, 1972). However, these authors feel that relatively little creative research has been conducted and many unexplained and contradictory findings exist.

Some research studies have investigated the value of biographical data for predicting college success. These are factors such as family background, income, motivation, and attitude toward education (Gordon, 1970; Hills, 1965; Willingham, 1964; Brown, 1964; Garcia, 1958; Webb, 1960; Rossman, 1975). However, if enough characteristics are identified that differentiate students with respect to the

academic needs and strengths, the college experience and the individual student will be matched. Gordon (1976) refers to this as a change in approach from predictive selections to prescriptive development. This approach would identify the college with the potential to provide the best academic experience for a given student. The criterion for admission should be the student's potential to complete a college program.

For those minority students who cannot meet the traditional requirements for admission (i.e., the College Entrance Examination Board, high school grades, etc.), other criteria are needed. Green (1969) and Williams (1969) suggest a list of concepts that could be used to select disadvantaged college students: 1) some evidence of ability to handle academic work, for example, high school grades showing improvement, acceptable achievement at some point, or promising standardized test scores; 2) a willingness to accept some measure of personal responsibility for achievement or failure; 3) at least a minimal perception of self-worth; 4) emotional toughness evidenced by perseverance in the face of frustrating circumstances of one's life; 5) some indication of leadership potential; 6) the capacity to think and plan creatively; 7) an ability to distinguish realistically between what is desired and what is possible; 8) a special talent (i.e., facility in music, art or

predicting the academic success of its students. Of the students who graduated cum lauda, magna cum laude, or summa cum laude in the classes of 1968 and 1969, only 31 percent had entered college with combined scores above their class medians, and 24 percent had scores below their class

Special Services

Counseling. One of the realizations of the 1960's was that access to higher education did not necessarily mean success. Today, minority students have access more readily to the college of their choice and major in their field of interest; however, there is a high probability that they may not complete their course work nor attempt more advanced programs. Miller and O'Connor (1969) state that success and survival can be measured by the number of Black students who realize their ability potential and who achieve high enough grade point averages in college to remain there. According to Lester Foster, president of Tuskegee Institute, "a lot of white colleges are letting Blacks in but they are not graduating them. It is not just because they are not able to do good work. The concern for graduation is not as great in some of the white colleges as it is at the "Black College." ("The Black College: The Price of Excellence," 1979, p. 29). The total commitment of many white colleges

was to raise the census of minority students to at least show a credible body count. Vast numbers of minority students have been lost in the void between entrance and completion. Therefore, where the admission criteria will determine the acceptance to college for any given individual, most educators will agree that additional support services are necessary. Counseling is an important factor in the success of students in an educational opportunity program.

Rousseve (1970) states that the minority student must be made aware by counseling of "the rules of the game" in relation to four major areas that concern his or her needs: 1) personal responsibility which includes attending class, doing assignments, studying effectively and achieving a balance between study and leisure; 2) institutional rules including understanding course requirements, course dropping procedures, cumulative grade point averages, and academic probation and dismissal; 3) bureaucratic rules involving financial aid and registering for courses; and 4) developing perceptual skills which enable the student to cope with the demands (as well as the intricacies) of what is going on in class, including the professor's expectations and individual personality inconsistencies.

Rousseve (1970) further states that the white student has certain psychological resources which are part of his ego-structure due to his history of prior successes.

The minority student, however, does not possess this "built-in" support for an attitude that working for success will necessarily produce success, i.e., s/he still believes that s/he will be held down by other factors. This phenomena causes an "alienation syndrome", which results in intellectual listlessness and overindulgence in social and recreational pursuits and an underlying attitude of depression, and, at times, hostile defeatism. This minority student, says Rousseve (1970), is avoiding the ambiguousness and the uncertainty of the demands placed on him/her by the institution. The counselors role then should be to establish personal rapport with the student, help the student to give a name to the problem that s/he is facing and define the total nature of it as well as to help the student find strategies to cope with the problem.

CHAPTER III

METHODS

Design of the Study

Quantitative research methods were used in this study. All the data collected were numerical (for example, grade points) or were converted into numbers. The applications of various statistical techniques were used to arrange and analyze the data.

Because of the large number of cases and variables employed in this study, both the raw data and numerical information (in its original form as collected), had to be put into a more meaningful and manageable form. Because there were such large numbers of variables, a curve was very difficult to construct. Thus, before attempting curve fitting, mathematical techniques were required to eliminate non-significant predictor variables. To accomplish this descriptive function, rules by which data could be presented graphically, in a more useable form, had to be developed (including rules calculating various statistics from masses of raw data). This demanded, therefore, that a number of statistical operations be done with the resulting study measurements or scores to fulfill the descriptive functions, as follows:

1. Frequency Distributions: These were used in order

to see at a glance an overall picture of the data by arranging the scores and grouping them in various ways. Several important questions could be answered by using the frequency distribution. Huck, Cormier, and Bounds (1974, p. p. 21) writes:

> We can see the most frequently occurring class of scores. We can identify any pattern in the distribution of scores. If most of the scores are concentrated in the middle of the frequency distribution with a few high and a few low scores then the group resembles what is called a normal distribution. On the other hand, if the bulk of the scores are concentrated at either the high or the low end of the frequency distribution with a few scores spread out at the other end, then the distribution would be described as skewed.

2. Graphing Techniques: Some graphing techniques were also utilized. Graphing techniques presented data in pictorial form so that the reader might readily comprehend the essential features of a frequency distibution (and compare one with another). Graphs should not be thought of as substitutes for statistical treatment of data, but rather, as visual aids for thinking about and discussing statistical problems. Popham and Sirotnik (1973, p. 9), for example, state: "When referring to graphs the horizontal line is called the abscissa or X axis,and the vertical lines is called the ordinate or Y axis. The nature of the abscissa and the ordinate must first be clearly designated for the graph to be meaninfully interpreted."

3. The "t" Test: This test was used when it was

necessary to determine the mean performance of two groups. Popham and Sirotnik (1973, p. 124-125) state:

> The t test is used to determine just how great the difference between two means must be in order for it to be judged significant, that is a significant departure from differences which might be expected by chance alone. Another way of stating the function of the t test is to assert that, through its use, we test the null hypothesis that two groups means are not significantly different, that is, the means are so similar that the sample groups can be considered to have been drawn from the same population. The reader should be reminded that, because a mean difference is "significant", it is not necessarily a meaningful or important mean difference. Other factors, such as how great the mean difference is, must be used to judge the importance of any statistically significant event.

4. Analysis of Variance: A one-way analysis of variance (abbreviated ANOVA) was used to compare two or more group means. This form of ANOVA was considered to be one-way because the comparison groups differed from each other along just one dimension. As Huck, Cormier and Bounds (1974, p. 58) explain:

> A one-way analysis of variance is an inferential statistical procedure which has the same general purpose as the t test: to compare groups in terms of the mean scores. The difference between the two procedures lies in the number of groups that can be compared. Whereas the t test is designed for comparing two groups, a one-way ANOVA can be used to compare two or more groups. Both procedures yield identical results in a two-way comparison, but the one-way ANOVA is more versatile because it can also be used to compare three or more groups. The one-way ANOVA is, in effect, an extension of the t test to a greater number of groups compared.

Finally, when using the analysis of variance, interactions, when found to be significant, were not considered to be as 'bad': i.e., an ANOVA without any significant interactions was better than one which had some. Kerlinger (1964, p. 213) states, for example, that "...one of the main advantages of an ANOVA is its ability to reveal interactions."

Data on which this longitudinal study were based was collected for freshmen who entered the University of Massachusetts at Amherst in 1975 and 1976. Thus for the graduating Class of 1979, academic progress was discussed over the course of the first four semesters; and for the graduating Class of 1980, academic outcomes were described for the first two semesters.

Variables

The variables considered in this study were the following:

I. Independent Variables

Supportive Services:

1. tutoring
2. counseling
3. special courses

II. Dependent Variables

1. academic performance
2. retention

III. Control Variables

1. financial aid
2. minority

IV. Moderator Variables

1. Age
2. Sex
3. High School Rank (percentile)
4. High School class size
5. High School classification
6. In state/out of state High School
7. SAT verbal scores
8. SAT mathematics scores
9. Graduating Class

Measurements of the Dependent Variables

I. Academic Performance:

A. Credits Attempted

B. Credits Earned

C. Credits Ratio

D. Cumulative Credits Earned

E. Grade Point Average

F. Cumulative Grade Point

G. Cumulative Grade Point and Credit Cumulative Credits Earned

II. Retention:

A. Credits Attempted

B. Credits Earned

C. Credits Ratio

D. Cumulative Credits Earned

E. Grade Point Average

F. Cumulative Grade Point

G. Cumulative Grade Point and Cumulative Credits Earned

Study, Subjects, Treatment

Subjects in this study were selected on the basis of two major criteria: 1) they were on the CCEBS active student list, and 2) they were financial aid recipients. There were 112 entering freshmen in the class of 1979 and 101 entering freshmen in the class of 1980. These students were used for the sample for which the data were analyzed. The data for these subjects were compiled from the following sources: the University of Massachusetts admission computer print-out; high school transcripts; the University of Massachusetts course (Afro-Am) computer print-out; the CCEBS tutors' hourly records; CCEBS students'

folders; and other University of Massachusetts records (i.e., miscellaneous computerized student grade card data.)

The proposed control group that was to be the base of the statistical analysis in this dissertation was to be drawn from the general University minority population who also received financial assistance. Such a group was unavailable. The next most reasonable statistically sound control group would have been a group of minority students drawn from the same CCEBS population, who received financial assistance, but who did not receive the special services of the CCEBS program. This group was also not available.

Data For Independent Variables

Counseling: Data used to evaluate the counseling component were collected by first identifying everything that could possibly be found in a student's folder for the class of 1979 and for the class of 1980. A numerical number was then assigned to each piece of information found. The numbers were then correlated to give information relative to the use of each item found in a student's folder.

For the class of 1979:

1. High School Transcript
2. What About You

3. Initial Contact Form
4. Academic Advising Sheet
5. Individual Counseling Form
6. Tutor Program Progress Report
7. Academic Contract
8. Course Planning Guide
9. Summer Orientation
10. Graduation Qualification (Cores)
11. Incoming Correspondence
12. Outgoing Correspondence
13. Communication Skills

For the Class of 1980:

1. High School Transcript
2. What About You
3. Initial Contact Form
4. Pre-registration Form (Summer 1976)
5. Individual Counseling Form
6. Tutor Program Progress Report
7. Academic Contract
8. Course Planning Guide
9. Pre-registration Package
10. Graduation Qualification (Cores)
11. Incoming Correspondence
12. Outgoing Correspondence
13. Freshmen Survey

14. Faculty Evaluation

15. Communication Skills

Information in each students' folder was then tallied and recorded according to the semester. See Appendix for data on each piece of information. Other information that may have been used by the counselor, but was not kept in the student's folder, was not used in this study for the evaluation of the counseling program, example: Telephone Contacts.

A questionnaire was administred to three key persons in the CCEBS counseling program: the counselor for the class of 1979; the counselor for the class of 1980; and the head counseling supervisor. The purpose of this questionnaire was to obtain the counselor's value (to the student) of each of the listed items found in a student's folder which represented a counseling contact. The value of each counseling experience was the average response from the three questionnaires administred to the CCEBS counselors. See Appendix for recorded responses on a scale of 5 (most valuable) to 1 (least valuable).

Based on the results of this questionnaire, the total numerical values were divided by the number of responses to obtain an average value for each item. This average value was then assigned to each item found in a student's folder and the total recorded in the data base.

Evaluation and weighting of the raw data gave further insight into: 1) the counseling process itself and 2) the difference in the three counselor's implementation of the process. It is expected that this approach will give the researcher more information as to the needs of individual students and possible treatment measures.

Tutoring: The data here were gathered from the CCEBS tutor's hourly report forms during the period of September 1975 through June 1977, including the number of hours the tutor recorded for each student client. This information was then recorded by semester.

Special Courses: This information was obtained from the University of Massachusetts Course computer print-out (Afro-American Studies Department), and then recorded by semester.

VARIABLE TABLE

Variables	Variable Description	Labels
1 - CN	Case Number	
2 - DB	Date of Birth (Month, Day, Year)	
3 - SA	Student Age	
4 - CLS	Graduating Class	1979 1980
5 - SX	Sex	0-Female 1-Male
6 - VER	College Board Scholastic Aptitude Test-Verbal	
7 - MAT	College Board Scholastic Aptitude Test-Mathematics	
8 - CLSZ	Class Size	
9 - PCT	Class Percentile	
10 - SM	Number of Semesters at Graduating High School	
11 - SC	School Classification	1-Public 2-Vocational/ Technical 3-Private 4-Academic 5-Public Academic 6-Private Vocational
12 - T	School: In/Out State	0-Out of State 1-In State
13 - RT	Retention	1-Returned 2-Left no record 3-Left Academic 4-Left other

14 - A	Credits Attempted 1st Semester
15 - E 1	Credits Earned 1st Semester
16 - RAT 1	Credit Ratio
17 - CE 1	Cumulative Credits Earned 1st Semester
18 - GPA 1	Grade Point Average 1st Semester
19 - CUM 1	Cumulative Grade Point Average 1st Semester
20 - A 2	Credits Attempted 2nd Semester
21 - E 2	Credits Earned 2nd Semester
22 - RAT 2	Credit Ratio 2nd Semester
23 - CE 2	Cumulative Credits Earned 2nd Semester
24 - GPA 2	Grade Point Average 2nd Semester
25 - CUM 2	Cumulative Grade Point Average 2nd Semester
26 - A 3	Credits Attempted 3rd Semester

27 - E
3 Credits Earned 3rd Semester

28 - RAT
3 Credit Ratio 3rd Semester

29 - CE
3 Cumulative Credits Earned 3rd Semester

30 - GPA
3 Grade Point Average 3rd Semester

31 - CUM
3 Cumulative Grade Point Average 3rd Semester

32 - A
4 Credits Attempted 4th Semester

33 - E
4 Credits Earned 4th Semester

34 - RAT
4 Credit Ratio 4th Semester

35 - CE
4 Cumulaitve Credits Earned 4th Semester

36 - GPA
4 Grade Point Average 4th Semester

37 - CUM
4 Cumulative Grade Point Average 4th Semester

38 - T
1 Tutoring Hours 1st Semester

39 - T 2	Tutoring Hours 2nd Semester	
40 - T 3	Tutoring Hours 3rd Semester	
41 - T 4	Tutoring Hours 4th Semester	
42 - S 1	Special Courses Taken 1st Semester	
43 - S 2	Special Courses Taken 2nd Semester	
44 - S 3	Special Courses Taken 3rd Semester	
45 - S 4	Special Courses Taken 4th Semester	
46 - C 1	Counseling Experiences 1st Semester	
47 - C 2	Counseling Experiences 2nd Semester	
48 - C 3	Counseling Experiences 3rd Semester	
49 - C 4	Counseling Experiences 4th Semester	
50 - YC	Coded Year of Birth	0 (Norm) 1 (1946-1954) 2 (1955) 3 (1956) 4 (1959-1960)

51 - CC	Coded School Classification	0 (Public Vocational) 1 (Private) 2 (Public Academic)
52 - C C 1	Coded Counseling Experience 1st Semester	0 (0-9.99) 1 (10-19.99) 2 (20-29.99) 3 (30-39.99) 4 (40-49.99) 5 (50-60.25)
53 - C C 2	Coded Counseling Experience 2nd Semester	0 (0-9.99) 1 (10-19.99) 2 (20-29.99) 3 (30-39.99) 4 (40-49.99) 5 (50-60.25)
54 - C C 3	Coded Counseling Experience 3rd Semester	0 (0-9.99) 1 (10-19.99) 2 (20-29.99) 3 (30-39.99) 4 (40-49.99) 5 (50-60.25)
55 - C C 4	Coded Counseling Experience 4th Semester	0 (0-9.99) 1 (10-19.99) 2 (20-29.99) 3 (30-39.99) 4 (40-49.99) 5 (50-65.25)
56 - RC	Coded Returned to UMass	0 (No) 1 (Yes)
57 - T C 1	Tutoring Hours Coded 1st Semester	0 (No) 1 (Yes)
58 - T C 2	Tutoring Hours Coded 2nd Semester	0 (No) 1 (Yes)
59 - G C 1	Grade Point Average Coded 1st Semester	0 (0-.49) 1 (.5-.99) 3 (1.5-1.99) 4 (2-2.99) 5 (2.5-2.99) 6 (3-3.49 7 (3.5-4)

60 - G C 1	Grade Point Average Coded 2nd Semester	0 (0-.49) 1 (.5-.99) 2 (1-1.49) 3 (1.5-1.99) 4 (2-2.49) 5 (2.5-2.99) 6 (3-3.49) 7 (3.5-4)
61 - G C 3	Grade Point Average Coded 3rd Semester	0 (0-.49) 1 (.5-.99) 2 (1-1.49) 3 (1.5-1.99) 4 (2-2.49) 5 (2.5-2.99) 6 (3-3.49) 7 (3.5-4)
62 - G C 4	Grade Point Average Coded 4th Semester	0 (0-.49) 1 (.5-.99) 2 (1-1.49) 3 (1.5-1.99) 4 (2-2.49) 5 (2.5-2.99) 6 (3-3.49) 7 (3.5-4)
63 - R C 1	Credit Ratio Coded 1st Semester	0 (0-.249) 1 (.25-.499) 2 (.5-.749) 3 (.75-1)
64 - R C 2	Credit Ratio Coded 2nd Semester	0 (0-.249) 1 (.25-.499) 2 (.5-.749) 3 (.75-1)
65 - R C 3	Credit Ratio Coded 3rd Semester	0 (0-.249) 1 (.25-.499) 2 (.5-.749) 3 (.75-1)
66 - R C 4	Credit Ratio Coded 4th Semester	0 (0-.249) 1 (.25-.499) 2 (.5-.749) 3 (.75-1)

Variables (Operational Definition)

1. Case Number - The Interactive Data Analysis Package (IDAP) lists a case number for each set of variables. The number corresponds to each of the subjects in the study and is used as the student identifier.
3. Student Age - Age of each student was determined by day, month, and year of birth.
4. Graduating Class - Two categories were considered: 1) Those subjects entering the University of Massachusetts in the fall of 1975 (classified as the class of 1979); and 2) those subjects who entered in the fall of 1976 (classified as the class of 1980).
6. College Board Scholastic Aptitude Test (SAT), Verbal- Scores were calculated to the nearest 10 units and treated as a continuous variable.
7. College Board Scholastic Aptitude Test (SAT), Mathematics- Scores were calculated to the nearest 10 units and treated as a continuous variable.
8. Class Size - The number of students in the high school graduating class was treated as a continuous variable.
9. Class Percentile - The inverse ratio of a student rank to his class size. Since the lower the number the higher the rank, the percentile was computed by subtracting the rank from the class size,

dividing that result by the class size, multiplying by 100 and rounding to a whole number.

10. Number of Semesters at Graduating High School - The total number of semesters a subject attended the high schoos/he graduated from was treated as a continuous variable.

11. School Classification - Six categories of high school were considered: 1) public, 2) vocational/technical, 3) private, 4) academic, 5) public academic, and 6) private vocational.

12. School (In/Out of State) - Two categories of geographical locations for a subject's high school were considered: 1) in-the-state of Massachusetts or 2) out-of-the-state of Massachusetts.

13. Retention - Four categories were considered: 1) returned to the University for the following semesters, 2) left with no record, 3) left because of academic reasons, and 4) left for other reasons.

14. Credits Attempted - A subject's total number of registered credits in a given semester.

15. Credits Earned - This has been determined by a subject's total number of registered credits receiving a passing grade of 1.0 (D) or better in a semester.

16. Credit Ratio - This has been determined by the proportion of credits earned to credits attempted and was computed by dividing the number of earned credits by the number of attempted credits. If all credits attempted were earned the ratio would be 1.

18. Grade Point Average - This measure was calculated from credits earned for each course and multipled by the corresponding grade for that course. These products were summed and that sum was divided by the total number of credits.

19. Cumulative Grade Point Average - This measure was calculated from the average of the Grade Point Average of the present semester and the preceding semesters.

23. Cumulative Credits Earned - The sum of the present semester and the preceding semesters.

38. Tutoring Hours - The total number of hours a subject spent being tutored by a CCEBS tutor.

45. Special Courses Taken - The number of special courses a subject was enrolled in during a given semester.

46. Counseling Experiences - The total number of counseling contacts a subject had with a CCEBS counselor in a given semester.

50. Coded Year of Birth - After the first Interactive Data Analysis Package (IDAP) statistical run, ages

of subjects were coded into five groups:
1) Group 0-Norm - Subject's year of birth 1957 or 1958, the largest group; 2) Group 1 - Subject's year of birth 1946-1954; 3) Group 2 - Subject's year of birth 1955, 4) Group 3 - Subject's year of birth, 1956; 5) Group 4 - Subject's year of birth, 1959-1960.

51. Coded School Classification - After the first IDAP statistical run, school classifications were coded into three groups: 1) group 0 - Public Vocational; 2) group 1 - Private; or 3) group 2 - Public Academic.

52. Coded Counseling Experience - After the first IDAP statistical run, counseling hours for each semester were coded into six groups: 1) group 0 (0-9.99); 2) group 1 (10-19.99); 3) group 2 (20-29.99); 4) group 3 (30-39.99); 5) group 4 (40-49.99); 6) group 5 (50-60.25).

56. Coded Returned to University of Massachusetts - After the first IDAP statistical run, retention information was coded into two groups:
1) group 0 (No) and 2) group 1 (Yes).

57. Tutoring Hours Coded - After the first IDAP statistical run, tutoring hours for each semester were coded into two groups: 1) group 0 (No) and 2) 1 (Yes).

59. Grade Point Average Coded - After the first IDAP statistical run, grade point averages for each semester were coded into eight groups: 1) Group 0 (0-.49); 2) Group 1 (.5-.99); 3) Group 2 (1-1.49); 4) Group 3 (1.5-1.99); 5) Group 4 (2-2.49); 6) Group 5 (2.5-2.99); 7) Group 6 (3-3.49); and 8) Group 7 (3.5-4).

63. Credit Ratio Coded - After the first IDAP statistical run, a subject's credit ratio for each semester was coded into four groups: 1) Group 0 (0.2.49); 2) Group 1 (.25-.499); 3) Group 2 (.5-.749); 4) Group 3 (.75-1).

** Unknowns: When data was not available, the IDAP statistical package employed a missing case (information) convention which automatically excluded any case in which data for any given variable was missing.

Variables (Operational Definitions) are numbered to coincide with the same items on the variable table, pp. 36-45.

Interactive Data Analysis Package (IDAP)

This tool was developed at the University of Massachusetts to provide a statistical package which would be adequate for a large percentage of statistical researchers but which would not be as comprehensive as some other packages. The result is a tool which satisfies the needs of most data analysts, but which is simple and easy to use. Its dynamic interactive nature allows immediate access to data and computations. The system keeps track of missing data and allows large numbers of cases and variables. It was chosen for its simplicity, power and availability. For the purposes of this study the package compared favorably with the Statistical Package of the Social Sciences (SPSS).

IDAP range of statistical test includes:

1. ANOVA, performed one way or n way analysis of variance, according to the number (up to five) of grouping variables specified. The options available for one way analysis of variance differed from those of n way analysis of variance.

2. CORREL, command computed the Pearson correlation coefficient between all pairs of the specified variables.

3. HIST, command printed histograms for the specified variable. If the group name (G) option was provided, a histogram was printed for each distinct value of the grouping variable.

4. FREQ, command produced a one-, two-, three-, or four-way frequency table (or cross-tabulation) of the variables. The last variable was shown along the columns, and the other variables were shown along the rows.

5. t TEST, command performed a one sample, two sample, or paired 't' test according to user choice.

A two sample 't' test compared the means of two subgroups in the variable. The G-option was used to designate that the grouping variable had more than two unique values, the VAL-option was used to designate the two particular values that marked the groups.

Significance of Individual Variables

In testing for significant differences in mean between samples, the 't' test was used when the grouping variables allowed division of a sample into two groups. Analysis of variance was used when the grouping variable divided the sample into three or more groups.

In the case of the 't' test, the 'f' value, the degrees

of freedom, the 'f' probability was used to determine whether or not the separate or pooled probability should be used to determine the significant difference of the mean.

The most sensitive form of 't' test was the pooled variance model, which was used for those variables that are non-continuous in nature. No statistically significant difference in variance of two groups was required when tested, using this model. This can be checked with the 'f' distributions. The 'f' ratio divided the larger sample variance by the smaller one to determine if the pooled or the separate variance model test would be used. When the value of 'f' became larger, there was generally a greater likelihood that there were statistically significant differences between the variances. With large enough sample sizes, one need not worry about the influence of even markedly divergent variances.

In the case of analysis of variance, when the overall 'f' probability approached a significance of .1, a separate 't' test was made for those two groups. This seemed to show the greatest disparity between means and also a relatively moderate standard deviation. Linear contrast was performed to compare those means which seemed to contribute most of the significance.

Specific Statistical Tests and Null Hypotheses

1. Effect of age.

The subjects were divided into age groups. The analysis of variance was applied to the five groups of the variable coded Year of Birth (50-YC).

Null Hypothesis:

There is no significant difference in the academic performance and retention of minority students on the basis of their age.

2. Effect of sex.

Group one consisted of the males and Group two, the females. The 't' test was used on the dependent variables of the resulting groups.

Null Hypothesis;

There was no significant difference in the academic performance and retention of minority men and minority women.

3. Effect of different types of high schools.

Group 1 were those subjects that graduated from a public vocational school, Group 2 were those subjects that graduated from a private school, Group 3 were those subjects that graduated from a public academic school.

The analysis of variance was applied to the three groups of the variable coded School Classification (51-CC).

Null Hypothesis: There was no significant difference in the college academic performance and retention of minority students from different types of high schools.

4. Effect of high schools (in/out of the state of Massachusetts).

Group 1 were those subjects that graduated from high schools in-the-state of Massachusetts and Group 2 were those subjects that graduated from a high school out-of-state of Massachusetts.

The t test was applied to the two groups of the variable School: In/Out State (12-T).

Null Hypothesis:

There was no significant difference in the college academic performance and retention of minority students from high school in/out-of-state of Massachusetts.

5. Effect of percentile rank in high school.

The analysis of variance was applied to the variable Class Percentile (9-PCT).

Null Hypothesis:

There was no significant difference in the college academic performance and retention of minority students on the basis of their high school percentile rank.

6. Effect of high school graduating class size.

The analysis of variance was applied to the variable Class Size (8-CLSZ).

Null Hypothesis:

There was no signficant difference in the college academic performance and retention of minority students on the basis of their high school class size.

7. Effect of SAT (College Board Scholastic Aptitude Test) verbal score.

The analysis of variance was applied to the variable SAT, Verbal (6-VER).

Null Hypothesis:

There was no signficant difference in the college academic performance and retention of minority students on the basis of the SAT verbal score.

8. Effect of SAT (College Board Scholastic Aptitude Test) mathematics score.

The analysis of variance was applied to the variable SAT, Mathematics (7-MAT).

Null Hypothesis:

There was no significant difference in the college academic performance and retention of minority students on the bais of their SAT mathematics score.

9. Effect of tutoring.

The t test was applied to the two Tutoring Hours Coded variables (57-T_1C and 58-T_2C).

Null Hypothesis:

There was no difference in the academic performance

and retention of minority students on the basis of the tutoring received.

10. Effect of counseling.

The analysis of variance was applied to the four Coded Counseling Experience variables (52-C_1C, 53-C_2C, 54-C_3C, and 55-C_4C).

Null Hypothesis:

There was no difference in the academic performance and retention of minority students on the basis of counseling.

11. Effect of special courses.

The analysis of variance was applied to the four Special Courses Taken variables (42-S_1, 43-S_2, 44-S_3, and 45-S_4).

Null Hypothesis:

There was no difference in the academic performance and retention of minority students on the basis of special courses.

C H A P T E R IV

RESULTS

Analysis of Data

In this section we will be concerned with the results of tests performed on all variables for which data was available. Because of the large number of missing variables some highly desirable analyses were not feasible.

The data was arranged so that the first and second semesters of the 1976 school year would be compared to the first and second semesters of the 1975 school year. Comparion was made of these two classes at the same level of academic and collegiate maturity. As a result, the number of subjects found in each test was less for the third and fourth semesters than for the first and second.

Frequencies and Histograms

It was necessary to use cut off points to collect most of the continuous data into groups in order to perform an analysis of variance. The subjects were grouped according to the year of their birth because less than 6% of the subjects were born before 1954 or after 1958. In the first grouping, five different years of birth were represented; and in the second group, two years of birth were represented). Conversely, the years 1957 and 1958 contained

40.19 and 33.18 percent of the sample, respectively.

TABLE 1a

Frequency Table, Age

Year	Frequency	Cumulative Frequency	Percent	Cumulative Percent
46	1	1	0.47	0.47
47	1	2	0.47	0.94
49	1	3	0.47	1.41
52	5	8	2.35	3.76
54	1	9	0.47	4.23
55	11	20	5.16	9.39
56	28	48	13.35	22.54
57	87	135	40.85	63.38
58	70	205	32.86	96.24
59	7	212	3.29	99.53
60	1	213	0.47	100.00
Total	213	213	100.00	100.00

TABLE 1b

Histogram for Variable, Age

Values	Frequency	Percent	
46	1	0.5	[
47	1	0.5	[
49	1	0.5	[
52	5	2.3	[
54	1	0.5	[
55	11	5.2	[
56	28	13.1	[
57	87	40.8	[
58	70	32.9	[
59	7	3.3	[
60	1	0.5	[

One represents 3 cases.

TABLE 1c

Frequency Table, Age Coded

Year	Frequency	Cumulative Frequency	Percent	Cumulative Percent
Norm	157	157	73.71	73.71
46-54	9	166	4.23	77.93
55	11	177	5.16	83.10
56	28	205	13.15	96.24
59-60	8	213	3.76	100.00
Total	213	213	100.00	100.00

TABLE 1d

Histogram for Variable, Aged Coded

Values	Frequency	Percent	
Norm	157	73.7	□□□□

S2	Frequency	Cumulative Frequency	Percent	Cumulative Percent
1	2	2	0.94	0.94
2	2	4	0.94	1.88
Missing	209	213	98.12	100.00
Total	213	213	100.00	100.00

S3	Frequency	Cumulative Frequency	Percent	Cumulative Percent
2	2	2	0.94	0.94
Missing	211	213	99.06	100.00
Total	213	213	100.00	100.00

S4	Frequency	Cumulative Frequency	Percent	Cumulative Perenct
2	1	1	0.47	0.47
Missing	212	213	99.53	100.00
Total	213	213	100.00	100.00

Although the school data was categorized into six types before entered as raw data, the frequency table for that data revealed that two of the categories contained fewer than 4% of the sample, another group contained just over 6 ½%. Therefore, it was determined that the three smaller groups would be merged with the three larger groups (i.e., vocational/technical with public, academic with public academic, and private vocational with private).

TABLE 3a

Frequency Table, School Classification

Sc	Frequency	Cumulative Frequency	Percent	Cumulative Percent
PUB	119	119	55.87	55.87
VOCTEC	3	112	1.41	57.28
PRIV	28	150	13.15	70.42
ACAD	14	164	6.57	77.00
PUBAC	34	198	15.96	92.96
PRIVAC	6	204	2.82	95.77
MISSING	9	213	4.23	100.00
Total	213	213	100.00	100.00

TABLE 6a

Frequency Table, Tutoring

T2	Frequency	Cumulative Frequency	Percent	Cumulative Percent
1	2	2	0.94	0.94
2	6	8	2.82	3.76
3	1	9	0.47	4.23
4	4	13	1.88	6.10
5	2	15	0.94	7.04
6	2	17	0.94	7.98
8	2	19	0.94	8.92
9	1	20	0.47	9.39
10	1	21	0.47	9.86
12	3	24	1.41	11.27
13	1	25	0.47	11.74
14	1	26	0.47	12.21
15	2	28	0.94	13.15
16	1	29	0.47	13.62
19	1	30	0.47	14.08
20	1	31	0.47	14.55
21	1	32	0.47	15.02
23	2	34	0.94	15.96
24	1	35	0.47	16.43
27	1	36	0.47	16.90
29	1	37	0.47	17.37
31	1	38	0.47	17.84
35	1	39	0.47	18.31
40	1	40	0.47	18.78
44	1	41	0.47	19.25
49	1	42	0.47	19.72
51	1	43	0.47	20.19
52	1	44	0.47	20.66
59	2	46	0.94	21.60
64	1	47	0.47	22.07
145	1	48	0.47	22.54
Missing	165	213	77.46	100.00
Total	213	213	100.00	100.00

TABLE 6a

Frequency Table, Tutoring

T3	Frequency	Cumulative Frequency	Percent	Cumulative Percent
3	1	1	0.47	0.47
7	2	3	0.94	1.41
9	1	4	0.47	1.88
12	2	6	0.94	2.82
14	1	7	0.47	3.29
40	1	8	0.47	3.76
Missing	205	213	96.24	100.00
Total	213	213	100.00	100.00

TABLE 6a

Frequency Table, Tutoring

T4	Frequency	Cumulative Frequency	Percent	Cumulative Percent
1	1	1	0.47	0.47
2	1	2	0.47	0.94
3	1	3	0.47	1.41
4	1	4	0.47	1.88
7	1	5	0.47	2.35
8	1	6	0.47	2.82
12	1	7	0.47	3.29
17	1	8	0.47	3.76
18	1	9	0.47	4.23
20	1	10	0.47	4.69
29	1	11	0.47	5.16
42	1	12	0.47	6.10
Missing	200	213	93.90	100.00
Total	213	213	100.00	100.00

TABLE 6b

Histogram for Variable Tutoring

Histogram for Variable Tlc

Values	Frequency	Percent	
NO	159	74.6	[redacted]
YES	54	25.4	[redacted]

One [redacted] represents 4 cases.

Histogram for Variable T2C

Values	Frequency	Percent	
NO	165	77.5	[redacted]
YES	48	22.5	[redacted]

One [redacted] represents 4 cases.

Significance of Individual Variables
Measures of Academic Performance and Retention

The first null hypothesis (age) could not be rejected at the 0.10 level with the subjects for both the graduating class of 1979 and the Class of 1980. In general, the academic performance of the older group of subjects was lower than all the other age groups. With the older group of subjects, their first semester mean grade point average was 1.82; while during the second semester, a mean grade point average of 1.87 was obtained. On the other hand, for the norm group the mean grade point average was 2.14 and 2.07 for the first and second semesters respectively. These results seem to indicate that the older minority student those between age 21 to 28, spent more time in non-academic activities during his/her high school graduation and college admission. Similarly, the majority of this older age group, because of other involvements and experiences,probably did not even expect to have the opportunity to attend college. However, it has been observed that after the first two semesters, the mean grade point average for these two groups was about equal.

TABLE 7a

Significance of Individual Variable: Age

Analysis of Variance

Variable	Age	N	Mean	Standard Deviation	Probability
GPA 1	Norm	151	2.1378	0.9192	0.6503
	46-54	9	1.8200	0.7933	
	55	11	2.3409	1.1315	
	56	27	2.0115	0.8725	
	All	205	2.1092	0.9187	
GPA 2	Norm	149	2.0727	0.8429	0.5201
	46-54	8	1.8725	0.8925	
	55	11	2.3863	0.9750	
	56	25	2.2240	0.7680	
	59-60	8	1.8362	0.8505	
	All	201	2.0913	0.8505	
GPA 3	Norm	61	2.0859	0.9181	0.9778
	46-54	1	2.1000	0.0000	
	55	6	2.1100	0.5047	
	56	17	2.1959	0.9375	
	All	85	2.1098	0.8869	
GPA 4	Norm	64	2.2058	0.9695	0.9954
	46-54	2	2.0850	0.8273	
	55	4	2.2050	0.4799	
	56	14	2.550	0.9439	
	All	84	2.2111	0.9329	

TABLE 7b

Significance of Individual Variable: Age

Analysis of Variance

Source	Degree Freedom	Mean Square	F-Value	Probability
RAT 1	4	0.0179	0.3113	0.8702
	200	0.0576		
RAT 2	4	0.0480	0.8328	0.5057
	196	0.0576		
RAT 3	3	0.0147	0.2050	0.8926
	81	0.0716		
RAT 4	3	0.0353	0.5755	0.6328
	80	0.0613		
A 1	4	3.0727	0.5240	0.7182
	200	5.8642		
A 2	4	10.160	1.5676	0.1845
	196	6.481		
A 3	3	6.9142	0.8334	0.4794
	81	8.2964		
A 4	3	0.5131	0.0994	0.9601
	80	5.1645		
E 1	4	5.902	0.3598	0.8370
	200	16.404		
E 2	4	18.592	0.9837	0.4176
	196	18.901		

Source	Degree Freedom	Mean Square	F-Value	Probability
E 3	3	0.883	0.0382	0.9899
	81	23.096		
E 4	3	8.469	0.4697	0.7042
	80	18.030		
CUM 2	4	0.4109	0.7161	0.5818
	196	0.5737		
CUM 3	3	0.2334	0.6965	0.5568
	81	0.3351		
CUM 4	3	0.0589	0.1723	0.9148
	80	0.3417		
CE 2	4	50.848	0.9753	0.4221
	196	52.134		
CE 3	3	19.763	0.2691	0.8475
	81	73.443		
CE 4	3	82.48	0.4584	0.7121
	80	179.92		
PCT	4	258.87	0.4950	0.7394
	107	522.95		
VER	4	158.81	1.8683	0.1210
	111	85.00		
MAT	4	119.14	1.1737	0.3264
	110	101.50		

For the second null hypothesis (sex) there was a statistically significant difference (at the .05 level) between male and female grade point averages in their first semester. After the first semester, there was no statistically significant difference in grade point averages between male and female students. The grade point average for males was higher in their first semester. The grade point average of the female was higher than the male in the three subsequent semesters, but not significantly so. In the first two semesters, the number of males was twice the number of females; and, in the last two semesters, the number of males was almost three times as many as the number of females. This pattern for the number of subjects was consistent throughout all the data of the measurement of academic performance. The range of the means of the grade point averages over the four semesters varied from a low of 1.93 in the first semester for the females, to a high of 2.39 in the fourth semester.

Although there was no statistically significant difference based on sex as to the ratio of earned credit to attempted credits, the male completed almost four percent more credits than their female counterparts during the first semester. In the second, third, and fourth semesters, however, the females out performed the males by appoximately 4-8% and 5% respectively. Again, the lowest and highest

completion rate for all of the students over the four semesters was held by the females. The range varied from just over 80% in the first semester to almost 90% in the third and fourth semesters.

There was no statistically significant difference in the number of credits attempted over the four semesters between male and female students. Nevertheless, a pattern similar to the above cases was apparent. In the first semester, the females attempted a little over one fifth fewer credits than their male counterparts. However, by the second semester, they had surpassed the males in credits attempted; and indeed, by the fourth semester, they had almost a whole credit more than the males. In fact, the fourth semester probability for this variable was the closest to statistical significance thus far (.13).

Again, although there was no statistically significant difference between males and females in number of credits earned over the four semesters, the females showed steady achievement in the mean number of credits earned and the males showed no change.

For the third semester of data regarding culmulative earned credits, there were no statistically significant differences between males and females. Nevertheless, a pattern of distinction developed over the three semesters. At the end of two semesters, males and females had earned the same number of credits--the males having achieved on

the average only .16 more semester credit hours. However, by the end of the third semester, the females were ahead by nearly two credits, and by the end of the fourth semester, they had a solid four credit lead.

No statistically significant difference was found between male and female students in their cumulative grade point average at the end of the second, third, and fourth semesters. However, the data for this variable does not confirm what was found for the other measures of academic performance (only in this particular variable do males maintain a slightly higher average cumulative throughout).

There was a statistically signficant difference (to the .007 level) between male and female students in their mathematics SAT scores. The males' score almost five points higher on the average than the females. However, the verbal SAT scores showed no statistically significant difference (with the female scoring slightly more than four-tenths of a point over the males).

For both the SAT mathematics and verbal scores, the sample sizes were much closer than in the academic performance data. There was no statistically significant difference in the percentile class ranking of male and female students although the females averaged almost six points higher.

TABLE 8

SIGNIFICANCE OF INDIVIDUAL VARIABLE: SEX

t TEST

VARIABLE		N	MEAN	STANDARD DEVIATION	t	PROBABILITY
GPA 1	M	137	2.1967	-0.9278	s -1.9836	s 0.0493
	F	68	1.9329	0.8805	p -1.9488	p 0.0527
					f 1.1104	f 0.6398
GPA 2	M	133	2.0617	0.8892	s 0.7203	s 0.5724
	F	68	2.1491	0.7724	p 0.6883	p 0.4921
					f 1.3255	f 0.2006
GPA 3	M	63	2.0433	0.8810	2 1.1613	s 0.2531
	F	22	2.3000	0.8965	p 1.1712	p 0.2449
					f 1.0355	f 0.8757
GPA 4	M	61	2.1433	0.9232	s 1.0690	s 0.2917
	F	23	2.3909	0.9553	p 1.0858	p 0.2807
					f 1.0707	f 0.8039
RAT 1	M	137	0.8391	0.2456	s -1.0517	s 0.2947
	F	68	0.8032	0.2227	p -1.0175	p 0.3101
					f 1.2167	f 0.3723
RAT 2	M	133	0.8153	0.2595	s 1.1608	s 0.2473
	F	68	0.8532	0.1943	p 1.0590	p 0.2909
					f 1.7845	f 0.0093
RAT 3	M	63	0.8067	0.2711	s 1.3995	s 0.1690
	F	22	0.8918	0.2362	p 1.3090	p 0.1941
					f 1.3172	f 0.4905

Variable		N	Mean	Standard Deviation	t	Probability
RAT 4	M	61	0.8607	0.2430	s 0.7021	s 0.4869
	F	23	0.8824	0.2551	p 0.7180	p 0.4748
A 1	M	137	14.292	2.3268	s -0.5890	s 0.5570
	F	68	14.074	2.5819	p -0.6100	p 0.5425
					f 1.2313	f 0.3088
A 2	M	133	15.120	2.4403	s 0.2876	s 0.7741
	F	68	15.235	2.7972	p 0.3006	p 0.7640
					f 1.3139	f 0.1855
A 3	M	63	14.683	2.4018	s 0.4027	s 0.6904
	F	22	15.045	2.9818	p 0.5080	p 0.6128
					f 2.7485	f 0.0022
A 4	M	61	15.000	2.2361	s 1.5444	s 0.1302
	F	23	15.826	2.1669	p 1.5223	p 0.1318
					f 1.0648	f 0.9034
CE 2	M	133	24.496	7.2568	s -0.1469	s 0.8835
	F	68	24.338	7.1958	p -0.1465	p 0.8837
					f 1.0170	f 0.9552
CE 3	M	63	38.349	7.576	s 0.6861	s 0.4982
	F	22	40.045	10.697	p 0.8082	p 0.4213
					f 1.9938	f 0.0379
CE 4	M	61	48.951	12.408	s 1.1125	s 0.2739
	F	23	52.913	15.288	p 1.2229	p 0.2249
					f 1.5182	f 0.2053
CUM 2	M	133	2.1321	0.7151	s -0.6434	s 0.5210
	F	68	2.0615	0.7766	p -0.6264	p 0.5318
					f 1.1796	f 0.4556

Variable		N	Mean	Standard Deviation	t	Probability
CUM 3	M	63	2.2422	0.5526	s -0.5795	s 0.5663
	F	22	2.1527	0.6466	p -0.6254	p 0.5334
					f 1.2688	f 0.3402
CUM 4	M	61	2.2492	0.5527	s -0.3066	s 0.7610
	F	23	2.2026	0.6447	p -0.3288	p 0.7431
					f 1.3606	f 0.3462
E 1	M	137	12.102	3.9562	s -1.0652	s 0.2888
	F	68	11.456	4.1553	p -1.0830	p 0.2801
					f 1.1032	f 0.6237
E 2	M	133	12.496	4.5271	s 0.9286	s 0.3546
	F	68	13.074	3.9750	p -1.8904	p 0.3743
					f 1.1032	f 0.2375
E 3	M	63	11.905	4.3874	s 1.3393	s 0.1902
	F	22	13.636	5.4820	p 1.4914	p 0.1397
					f 1.5612	f 0.1800
E 4	M	61	12.639	4.0333	s 1.3814	s 0.1757
	F	23	14.130	4.5458	p 1.4589	p 0.1484
					f 1.2702	f 0.4589
MAT	M	66	43.045	11.208	s -2.7491	s 0.0070
	F	49	38.204	7.662	p -2.6042	p 0.0104
					f 2.1396	f 0.0066
VER	M	67	35.119	8.673	s 0.2379	s 0.8125
	F	49	35.551	10.308	p 0.2444	p 0.8074
					f 1.4124	f 0.1922
PCT	M	72	57.778	24.152	s 1.4092	s 0.1620
	F	40	63.675	19.403	p 1.3242	p 0.1882
					f 1.5494	f 0.1385
CLSZ	M	72	429.44	260.76	s 0.5236	s 0.6024
		40	463.00	355.69	p 0.5712	p 0.5690
					f 1.8607	f 0.0232

Null hypothesis 3, the effect of attendance at different type high schools on college academic performance and retention was not strong enough to be statistically significant at the 0.10 level. The failure to show statistically that minorities graduating from private or public academic schools would have greater college academic success, than minority students who graduated from public vocational schools (vocational/technical and public), was a puzzling and unexpected result (see coding list). The criteria could not be easily measured due to the possible lack of equal opportunities within the given high school settings from which the subjects in the sample were drawn. For both classes, 57.38 percent of the subjects attended a public vocational school, 15.96 percent of the subjects attended private school, and 22.54 percent attended a public academic school (see Table 9). Although a statistical significance was not obtained, there seemed to be a slight tendency for greater academic performance of those students who attended private high school in their first two semesters. The trend in the direction of smaller class size, in private schools (statistically significant at the .005 level), may also reflect the initial tendency toward higher academic achievement. The initial students who attended public academic high school showed a slight increase in their

academic performance in comparison to those who attended private high schools.

TABLE 9

Significance of Individual Variable: School Classification

Analyses of Variance

Source	Degree Freedom	Mean Square	F-Value	Probabiliy
GPA 1	2	0.4607	0.5328	0.5878
	193	0.8647		
GPA 2	2	0.3497	0.4790	0.6202
	190	0.7301		
GPA 3	2	1.5218	2.0581	-0.1344
	80	0.7394		
GPA 4	2	1.1946	1.4404	0.2431
	78	0.8294		
RAT 1	2	0.0060	0.1175	0.8892
	193	0.0574		
RAT 2	2	0.0451	0.8063	0.4480
	190	0.0560		
RAT 3	2	0.0379	1.1081	0.3352
	80	0.0667		
RAT 4	2	0.0130	0.5789	0.5629
	78	0.0536		

Source	Degree Freedom	Mean Square	F-Value	Probability
A 1	2	12.245	2.1563	0.1185
	193	5.678		
A 2	2	20.633	3.2435	0.0412
	190	6.361		
A 3	2	1.0826	0.1270	0.8809
	80	8.5265		
A 4	2	1.9377	0.3810	0.6844
	78	5.0855		
CE 2	2	59.259	1.1438	0.3208
	190	51.809		
CE 3	2	69.658	0.9770	0.3809
	80	71.296		
CE 4	2	166.16	0.9685	0.3842
	78	171.55		
CUM 2	2	0.1162	0.1958	0.8223
	190	0.5936		
CUM 3	2	0.2397	0.7124	0.4935
	80	0.3364		
CUM 4	2	0.2336	0.7002	0.4996
	78	0.3337		
CE 1	2	13.882	0.8598	0.4249
	193	16.146		

Source	Degree Freedom	Mean Square	F-Value	Probability
CE 2	2	30.694	1.6844	0.1883
	190	18.223		
CE 3	2	20.595	0.9515	0.3905
	80	21.644		
CE 4	2	13.956	0.8642	0.4254
	78	16.150		
CLSZ	2	503867	6.2531	0.0027
	109	80579		

There was a statistically significant difference in the grade point averages at the 0.01 level or better, among students graduating from out-of-state high schools (4) and those graduating from in-state high schools, for the first and second school semesters. The out-of-state group achieved more than 1/3 grade point higher than their in-state counterparts. A similar statistical significance (at the .05 level) was found for credit ratio in the second semester, credits attempted in the first and third semesters, and credits earned in the second semester. Also, the SAT verbal score was significant at the 0.002 level, and likewise, the SAT mathematics score at the 0.03 level. The statistical data gathered and analysis made were done on the basis of the high school the student graduated from independent of a students residential status.

TABLE 10

Significance of Individual Variables:

School: In/Out State

t Test

Variable	N	Mean	Standard Deviation	t	Probability
GPA					
1 OUT ST	52	2.3877	0.9720	s 2.5154	s 0.0138
IN ST	146	2.0010	0.8936	p 2.6182	p 0.0095
				f 1.1831	f 0.4385
GPA					
2 OUT ST	52	2.3606	0.7669	s 2.6539	s 0.0092
IN ST	142	2.0191	0.8633	p 2.5117	p 0.0128
				f 1.2674	f 0.3335
GPA					
3 OUT ST	32	1.9944	1.0292	s -1.1331	s 0.2624
IN ST	51	2.2325	0.7516	p -1.2162	p 0.2274
				f 1.8753	f 0.0465
GPA					
4 OUT ST	32	2.1337	1.1078	s -0.7373	s 0.4644
IN ST	49	2.2994	0.7707	p -0.7940	p 0.4296
				f 2.0660	f 0.0232
RAT					
1 OUT ST	52	0.8506	0.2390	s 0.8144	s 0.4176
IN ST	146	0.8191	0.2410	p 0.8112	p 0.4182
				f 1.0165	f 0.9729
RAT					
2 OUT ST	52	0.8914	0.2034	s 2.2212	s 0.0284
IN ST	142	0.8139	0.2442	p 2.0412	p 0.0426
				f 1.4416	f 0.1349
RAT					
3 OUT ST	32	0.8050	0.3281	p -0.8469	p 0.4014
IN ST	51	0.8597	0.2044	p -0.9384	p 0.3508
				f 2.5756	f 0.0028

Variable		N	Mean	Standard Deviation	t	Probability
RAT						
4	OUT ST	32	0.8244	0.2589	s -1.1001	s 0.2760
	IN ST	49	0.8845	0.2090	p -1.1506	p 0.2534
					f 1.5350	f 0.1785
A						
1	OUT ST	52	14.750	1.8774	s 2.2327	s 0.0274
	IN ST	146	14.000	2.5650	p 1.9310	p 0.0549
					f 1.8667	f 0.0116
A						
2	OUT ST	52	15.596	2.8919	s 1.1693	s 0.2458
	IN ST	142	15.070	2.4223	p 1.2692	p 0.2059
					f 1.4254	f 0.1084
A						
3	OUT ST	32	13.937	2.9832	s -2.2081	s 0.0310
	IN ST	51	15.373	2.7126	p -2.2571	p 0.0267
					f 1.2094	f 0.5394
A						
4	OUT ST	32	15.219	1.7913	s -0.0542	s 0.9565
	IN ST	49	15.245	2.5044	p -0.0511	p 0.9594
					f 1.9547	f 0.0504
CE						
2	OUT ST	52	26.154	7.2906	s 1.8502	s 0.0676
	IN ST	142	23.979	7.1474	p 1.8674	p 0.0634
					f 1.0405	f 0.8353
CE						
4	OUT ST	32	38.500	10.395	s -0.3808	s 0.7050
	IN ST	51	39.294	7.044	p -0.4150	p 0.6792
					f 2.1782	f 0.0138
CE						
4	OUT ST	32	50.750	13.464	s 0.0862	f 0.9316
	IN ST	49	50.490	12.984	p 0.0869	p 0.9310
					f 1.0753	f 0.8061
CUM						
2	OUT ST	52	2.3629	0.7948	s 2.6898	s 0.0086
	IN ST	142	2.0229	0.7374	p 2.7853	p 0.0059
					f 1.1616	f 0.4902

Variable		N	Mean	Standard Deviation	t	Probability
CUM 3	OUT ST	32	2.3344	0.7948	s 2.6898	s 0.2147
	IN ST	51	2.1647	0.5332	p 1.3073	p 0.1948
					f 1.4307	f 0.2547
CUM 4	OUT ST	32	2.3275	0.6613	s 0.9048	s 0.3695
	IN ST	49	2.2027	0.5131	p 0.9540	p 0.3430
					f 1.6610	f 0.1116
E 1	OUT ST	52	12.442	3.7595	s 1.2235	s 0.2241
	IN ST	146	11.678	4.1571	p 1.1663	p 0.2449
					f 1.2227	f 0.4124
E 2	OUT ST	52	13.904	4.3080	s 2.1204	s 0.0367
	IN ST	142	12.430	4.2383	p 2.1366	p 0.0339
					f 1.0332	f 0.8592
E 3	OUT ST	32	11.500	5.6225	s -1.4658	s 0.1491
	IN ST	51	13.157	3.8438	p -1.5949	p 0.1146
					f 2.1396	f 0.0161
E 4	OUT ST	32	12.563	4.0156	s -1.1072	s 0.2722
	IN ST	49	13.571	4.0000	p -1.1081	p 0.2712
					f 1.0078	f 0.9624
MAT	OUT ST	29	44.621	6.769	s 2.8511	s 0.0056
	IN ST	85	39.718	10.821	p 2.2883	p 0.0240
					f 2.5556	f 0.0064
VER	OUT ST	29	40.000	7.8102	s 3.5170	s 0.0009
	IN ST	86	33.779	9.3901	p 3.2102	p 0.0017
					f 1.4455	f 0.2714
PCT	OUT ST	24	65.167	22.949	s 1.2776	s 0.2096
	IN ST	88	38.443	22.495	p 1.2924	p 0.1989
					f 1.0408	f 0.8534
CLSZ	OUT ST	24	521.79	422.06	s 1.1336	s 0.2667
	IN ST	88	419.51	251.35	p 1.5040	p 0.1355
					f 2.8196	f 0.0006

The effect of the variable high school percentile (5) on grade point average was statistically significant at the level of 0.01 or less for the first semester, and 0.10 for the second semester. However, there was no significance for the third and fourth semesters. There was also no other statistically significant levels for academic performance.

TABLE 11

Significance of Individual Variable: Percentile

Analysis of Variance

Source	Degree Freedom	Mean Square	F-Value	Probability
GPA 1	7	1349.2	2.9064	0.0082
	101	464.2		
GPA 2	7	957.64	2.0526	0.0562
	96	466.55		
GPA 3	7	349.98	0.6459	0.7154
	40	541.84		
GPA 4	6	728.41	1.3824	0.2453
	40	526.91		
RAT 1	3	820.79	1.5999	0.1939
	105	513.04		
RAT 2	3	615.42	1.2396	0.2994
	100	496.46		
RAT 3	3	96.05	0.1773	0.9112
	44	541.72		
RAT 4	2	925.54	1.7259	0.1898
	44	536.27		
C 1	5	423.65	0.8226	0.5363
	105	515.01		
C 2	4	331.22	0.6301	0.6421
	104	525.68		

Source	Degree Freedom	Mean Square	F-Value	Probability
C 3	4	427.92	0.8576	0.4960
	49	510.62		
C 4	1	224.11	0.4230	0.5185
	48	529.82		
AGE	4	258.87	0.4950	0.7394
	107	522.95		

The effect of high school graduating class size (6) was not strong enough to be significant at the 0.10 level.

TABLE 12

Significance of Individual Variable: Class Size

Analysis of Variance

Source	Degree Freedom	Mean Square	F-Value	Probability
GPA 1	7	70964	0.7818	0.6040
	101	90765		
GPA 2	7	84701	0.9761	0.4532
	96	86771		
GPA 3	7	135431	1.2658	0.2916
	40	106990		
GPA 4	6	50508	0.4450	0.8441
	40	113497		
RAT 1	3	141776	1.6113	0.1912
	105	87988		
RAT 2	3	49994	0.5699	0.6361
	100	87729		
RAT 3	3	71956	0.6317	0.5985
	44	113904		
RAT 4	2	127750	1.2253	0.3035
	44	104260		
C 1	5	97368	1.0989	0.3655
	105	88601		
C 2	4	42635	0.4629	0.7628
	104	92102		

Source	Degree Freedom	Mean Square	F-Value	Probability
C 3	4	264545	2.8010	0.0358
	49	94446		
C 4	1	166316	1.4702	0.2313
	48	113128		

The SAT verbal (7) and mathematics (8) scores tended to indicate a greater success factor in the grade point averages of students in their first semester, but it was not statistically significant. However, mathematics scores did seem to be a little stronger predictor. They seemed to maintain their significance over two semesters. The first semester SAT verbal scores were significant to the .025 level, while the scores of the following semesters showed no significance. The SAT mathematics predictor showed a higher level of probable significance in the first semester at the .005 level. Thereafter, a steady observable decrease in the incidence of probable significance to the .01 level was noted by the second semester. The consistent reduction from the higher level of probable signficance of the first semester through the second semester was evident There was relatively little difference in the performance of students at a successful level of grade point average after the second semester in both the SAT verbal and mathematics scores. These data as a academic predictor seemed to indicate a somewhat higher tendency toward retention and better grade point averages through the first semester with higher SAT verbal and mathematics scores being attained.

TABLE 13a

Significance of Individual Variable: SAT Verbal

Analysis of Variance

Variable	Degree Freedom	Mean Square	F-Value	Probability
GPA 1	7	209.85	2.6008	0.0164
	103	80.69		
GPA 2	7	105.56	1.2255	0.2956
	103	86.14		
GPA 3	7	113.09	1.3981	0.2372
	35	80.89		
GPA 4	7	91.037	1.1504	0.3535
	38	79.136		
RAT 1	3	201.14	2.3453	0.0770
	107	85.76		
RAT 2	3	138.11	1.6069	0.1921
	107	85.95		
RAT 3	3	25.285	0.2780	0.8409
	39	90.942		
RAT 4	3	120.68	1.5442	0.2172
	42	78.15		
AGE	4	158.81	1.8683	0.1210
	111	85.00		
CC	2	619.89	8.0021	
	110	77.49		

TABLE 13b

Significance of Individual Variable: VERBAL

t Test

Variable	N	Mean	Standard Deviation	t	Probability
sx	67	35.119	8.673	s 0.2379	s 0.8125
	49	35.551	10.308	p 0.2444	p 0.8074
				f 1.4124	f 0.1922
T: OUT ST	32	12.563	4.0156	s 1.1072	s 0.2722
IN ST	49	13.571	4.0000	p 1.1081	p 0.2712
				f 1.0078	f 0.9624
Cls : 79	58	36.207	8.8511	s 1.0422	s 0.2996
80	58	34.397	9.8318	p 1.0422	p 0.2995
				f 1.2339	f 0.4300

TABLE 14a

Significance of Individual Variable: SAT Mathematics

Analysis of Variance

Source	Degree Freedom	Mean Square	F-Value	Probability
GPA 1	7	294.35	3.2362	0.0038
	102	90.95		
GPA 2	7	283.21	3.1131	0.0051
	102	90.97		
GPA 3	7	57.33	0.4995	0.8282
	34	114.78		
GPA 4	7	142.85	1.7274	0.1327
	37	82.70		
RAT 1	3	743.83	8.6585	0
	106	85.91		
RAT 2	3	147.48	1.4449	0.2339
	106	102.07		
RAT 3	3	48.26	0.4409	0.7251
	38	109.45		
RAT 4	3	72.842	0.7775	0.5133
	41	93.692		
AGE	4	119.14	0.1737	0.3264
	110	101.50		
CC	2	54.13	0.5182	0.5970
	109	104.44		

TABLE 14b

Significance of Individual Variable: MATHEMATICS

t Test

Variable		N	Mean	Standard Deviation	t	Probability
sx	M	66	43.045	11.208	s -2.7491	s 0.0070
	F	49	38.204	7.662	p -2.6042	p 0.0104
					f 2.1396	f 0.0066
Cls:	79	57	42.526	10.398	s 1.6348	s 0.1049
	80	58	39.466	9.659	p 1.6359	p 0.1047
					f 1.1587	f 0.5812
T: OUT ST		29	44.621	6.769	s 2.8511	s 0.0056
IN ST		85	39.718	10.821	p 2.2883	p 0.0290
					f 2.5556	f 0.0064

The effect of counseling (9) was not strong enough to be statistically demonstrable at the .10 level.

The impact of counseling on grade point average was not significant for any of the four semesters. Furthermore, the distribution of the means over the grouping of counseling service received showed no clear trend toward or away from improved grade point average with increased counseling. In the first semester the two highest means of the grade point average were achieved by the next to the highest counseling service groups. Similarly, in the third semester, the highest mean of the grade point average was achieved by the second highest counseling group. On the other hand, the second semester data which show the best probability (.21), indicated a steady decline in the mean of the grade point average as the counseling increased.

The data for the ratio of credits earned to credits attempted followed a similar pattern, with the best probability of .145 found in the third semester. Data for all tests in counseling in the third semester were skewed by the fact that the three students in the next highest group all achieved 1.0 ratios and performed highly on all measures of academic success. In contrast, the two students in the highest group varied widely in their performance. Their means were very low, but since

the standard deviation was higher than their means, there was no consistency.

Again, there were no significant differences among counseling groups for the variable credits attempted and credits earned over the four semesters. The means were randomly scattered over the counseling groups. In fact, the statistical probability that the null hypothesis was true exceeded .95 in one case and approached or exceeded .9 in three others.

For the cumulative data, both cumulative grade point average and cumulative earned credits (credit generations), there were significant difference in all the semesters, (second, third, and fourth) except for the cumulative earned credits at the end of the second semester, which showed only a probability of about .16. The cumulative data for the third and fourth semesters were significant at the .05 level. The cumulative earned credit data for the same semesters were significant at the .1 level. The cumulative GPA data for the second semester indicated significance at the .005 level. Unfortunately, the trend of the means for each of these indicated that although the null hypothesis was rejected, students with fewer counseling contacts performed better academically.

The data for the predictor variables, class size, percentile ranking in graduating class, verbal and mathematics scores on the SAT, showed very few trends of

interest or significant probabilities.

The impact of class size was slight although there was some tendency for students who came from larger schools to utilize counseling services more frequently. This pattern of the means was most apparent in the first semester. Although the third semester showed a significance at the .036 level, this was probably due to the fact that the only student in the highest level counseling grouping came from a high school graduating class more than twice as large as the average size in the second group (and was more than three times as large as the means of the remaining groups).

Probabilities for class percentile ranking were all nearly .5 or higher and the means variously distributed throughout the range of counseling contact grouping. The data for the SAT verbal and mathematics scores did produce two significant results and noteworthy trends. There was a generally visible trend of declining mean scores as the level of counseling increased. This trend was found in all semesters for both variables except for the test for the SAT mathematics scores in the first semester of counseling. There was no trend in this case.

TABLE 15

ANOVA

Variance for Counseling

Source	Degree Freedom	Mean Square	F-Value	Probability
GPA 1	5	0.5584	0.6541	0.6587
	197	0.8537		
GPA 2	4	1.0629	1.4868	0.2077
	194	0.7149		
GPA 3	4	1.0792	1.4038	0.2405
	78	0.7687		
GPA 4	2	0.7374	0.8281	0.4406
	79	0.8904		
RAT 1	5	0.0104	0.1774	0.9708
	197	0.0584		
RAT 2	4	0.0154	0.2702	0.8969
	194	0.0571		
RAT 3	4	0.1178	1.7614	0.1451
	78	0.0669		
RAT 4	2	0.0819	1.3489	0.2654
	79	0.0607		
A 1	5	1.3547	0.2276	0.9502
	97	5.9533		

Source	Degree Freedom	Mean Square	F-Value	Probability
A 2	4	1.9140	0.2874	0.8859
	194	6.6589		
A 3	4	4.7784	0.6353	0.6600
	78	7.8943		
A 4	2	7.3707	1.4902	0.2316
	79	4.9460		
CE 2	4	83.312	1.6722	0.1580
	199	49.822		
CE 3	4	179.36	2.7211	0.0354
	78	65.92		
CE 4	2	579.72	3.4728	0.0358
	79	166.93		
CUM 2	4	2.7670	5.2910	0.0005
	194	0.5230		
CUM 3	4	0.7206	2.2688	0.0672
	78	0.3148		
CUM 4	2	0.9820	2.0902	0.0510
	79	0.3178		
E 1	5	5.012	0.3011	0.9118
	197	16.646		
E 2	4	5.514	0.2929	0.8823
	194	18.824		

Source	Degree Freedom	Mean Square	F-Value	Probability
E 3	4	40.061	1.8505	0.1276
	78	21.649		
E 4	2	24.726	1.4027	0.2520
	79	17.627		
PCT 1	5	423.65	0.8226	0.5363
	105	515.01		
PCT 2	4	331.22	0.6301	0.6421
	104	525.68		
PCT 3	4	437.92	0.8576	0.4960
	49	510.62		
PCT 4	1	224.11	0.4230	0.5185
	48	529.82		
CLSZ 1	5	97368	1.0989	0.3655
	105	88601		
CLSZ 2	4	42635	0.4629	0.7628
	104	92102		
CLSZ 3	4	264545	2.8010	0.0358
	49	94446		
CLSZ 4	1	166316	1.4702	0.2312
	48	113128		
VER 1	5	181.74	2.2021	0.0594
	108	82.56		

Source	Degree Freedom	Mean Square	F-Value	Probability
VER 2	4	151.10	1.7828	0.1375
	109	84.75		
VER 3	3	84.412	1.0719	0.3695
	50	78.752		
VER 4	1	72.352	0.8986	0.3483
	44	80.518		
MAT 1	5	60.96	0.5779	0.7168
	107	105.48		
MAT 2	4	473.70	5.3019	0.0006
	108	89.34		
MAT 3	3	151.20	1.6165	0.1976
	49	93.54		
MAT 4	1	40.164	0.4396	0.5109
	43	91.364		
SC 1	2	0.5179	2.0909	0.1263
	201	0.2477		
SC 2	2	40.31	0.0772	0.9258
	109	522.12		
SC 3	2	619.89	8.0021	0.0006
	110	77.47		
SC 4	2	54.13	0.5182	0.5970
	109	104.44		

The next null hypothesis (10), tutoring could not be rejected at the 0.10 level with the given subjects for both the class of 1979 and 1980. These tests were performed only during the first and second semester in this study because data for the class of 1980 were only available for those semesters. The data for tutoring hours were too small in the third and fourth semesters to be used or statistically analyzed.

The t test measuring the impact of tutoring on the academic variables (i.e., GPA; CE; A; E; and RAT) for the first and second semesters produced no significant results. The GPA's for these semesters were slightly higher for those students who received no tutoring. However, the average credits attempted in the first semester was somewhat higher for those students who did have tutoring that semester. In the second semester, the tutored students earned a slightly higher number of credits and achieved a slightly higher ratio.

Based on this data, one conclusion that the number of students receiving tutoring remained consistent. About 1/3 of the total number of students studied elected to remain untutored. In general, the effect of tutoring on academic performance was not significant. However, for example, the grade point average for both semesters was close enough to suggest that the tutoring received helped those students who needed it to attain grade point averages almost as high

as those who didn't need tutoring.

TABLE 16

Significance of Individual Variable: Tutoring

t Test

Variable		N	Mean	Standard Deivation	t	Probability
GPA						
1	NO	151	2.1483	0.9290	1.0198	0.3091
	YES	54	1.9998	0.8886		
GPA						
2	NO	153	2.1040	0.8522	0.3769	
	YES	48	2.0508	0.8529		
RAT						
1	NO	151	0.8353	0.2422	0.8148	0.4161
	YES	54	0.8045	0.2279		
RAT						
2	NO	153	0.8251	0.2457	-0.3247	
	YES	48	0.8380	0.2212		
1st Semester						
A						
1	NO	151	14.106	2.4553	-1.1287	0.2603
	YES	54	14.537	2.2713		
A						
2	NO	149	15.027	2.5862	-1.2424	0.2156
	YES	52	15.538	2.4691		
2nd Semester						
A						
1	NO	159	14.170	2.5488	-0.5480	0.5843
	YES	46	14.391	1.8676		
A						
2	NO	153	15.059	2.7199	-0.9924	0.3222
	YES	48	15.479	1.9569		

Variable		N	Mean	Standard Deviation	t	Probability
1st Semester						
CUM						
1	NO	151	2.1496	0.9306	1.0270	0.3056
	YES	54	1.9998	0.8886		
CUM						
2	NO	149	2.1237	0.7526	0.4910	0.6240
	YES	52	2.0638	0.7687		
2nd Semester						
CUM						
1	NO	159	2.1398	0.9357	0.8578	0.3920
	YES	46	2.0076	0.8650		
CUM						
2	NO	153	2.1368	0.7661	0.9579	0.3393
	YES	48	2.0171	0.7198		
1st Semester						
E						
1	NO	151	11.947	4.0460	0.3115	0.7256
	YES	54	11.722	3.9972		
E						
2	NO	149	12.497	4.3475	-1.0765	0.2830
	YES	52	13.250	4.3380		
2nd Semester						
E						
1	NO	159	11.849	4.1904	-0.2557	0.7984
	YES	46	12.022	3.4286		
E						
2	NO	153	12.614	4.5511	-0.4484	0.6543
	YES	48	12.937	3.6519		
1st Semester						
PCT						
1	NO	89	58.449	23.214	-1.3224	0.1888
	YES	23	65.435	19.860		

Variable	N	Mean	Standard Deviation	t	Probability
2nd Semester					
PCT					
2 NO	96	61.187	23.202	1.4997	0.1366
YES	16	52.062	17.714		

The effect of special courses on academic performance and retention was not statistically analyzed after preliminary testing showed that subjects studied did not use this service. (see Table 2).

In each case where the t test for each class was performed, a preliminary check of the variances showed no statistically significant differences between the graduating Class of 1979 and the Class of 1980. Since there were no significant difference in the two classes on any variables, no further tests were made on the separate groups by class.

Variable		N	Mean	Standard Deviation	t	Probability
CUM						
2	79	110	2.0642	0.7249	s -0.9007	s 0.3689
	80	91	2.1614	0.7913	p -0.9082	p 0.3649
					f 1.1915	f 0.3810
E						
1	79	107	11.916	3.7596	s 0.1035	s 0.9177
	80	98	11.857	4.3149	p 0.1041	p 0.1972
					f 1.3173	f 0.1655
E						
2	79	110	12.609	4.2493	s -0.2935	s 0.7695
	80	91	12.791	4.4833	p -0.2950	p 0.7683
					f 1.1132	f 0.5905
MAT	79	57	42.526	10.398	s 1.6348	s 0.1049
	80	58	39.466	9.659	p 1.6359	p 0.1047
					f 1.1587	f 0.5812
VER	79	58	36.207	8.8511	s 1.0422	s 0.2996
	80	58	34.397	9.8318	p 1.0422	p 0.2995
					f 1.2339	f 0.4300
PCT	79	59	59.746	23.086	s -0.0679	s 0.9460
	80	53	60.038	22.382	p -0.0678	p 0.9461
					f 1.0648	f 0.8209
CLSZ	79	59	456.20	328.96	s 0.5608	s 0.5761
	80	53	424.98	258.97	p 0.5537	p 0.5809
					f 1.6136	f 0.0814

The response of retention variable was similar to the response of academic performances. In other words the students who performed well were also those who returned.

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TABLE 18

Significance of Individual Variable: Retention

t Test

Variable		N	Mean	Standard Deviation	t	Probability
GPA						
1	NO	62	1.5152	0.9491	s -6.2968	s 0.0000
	YES	141	2.3786	0.7763	p -6.8059	p 0.0000
					f 1.4948	f 0.0548
GPA						
2	NO	52	1.4758	0.8235	s -6.4395	s 0.0000
	YES	146	2.3142	0.7555	p -6.7093	p 0.0000
					f 1.1880	f 0.4277
GPA						
3	NO	17	1.1084	0.8532	s -5.6809	s 0.0000
	YES	67	2.3290	0.6908	p -6.4451	p 0.0000
					f 1.5254	f 0.2346
GPA						
4	NO	13	1.0554	0.8429	s -5.5578	s 0.0000
	YES	70	2.4490	0.7587	p -5.9790	p 0.0000
					f 1.2341	f 0.5570
RAT						
1	NO	62	0.6766	0.3040	s -5.3090	s 0.0000
	YES	141	0.8947	0.1666	p -6.2895	p 0.0000
					f 3.3296	f 0.0000
RAT						
2	NO	52	0.6626	0.2986	s -5.0707	s 0.0000
	YES	146	0.8865	0.1853	p -7.8581	p 0.0000
					f 2.5976	f 0.0000
RAT						
3	NO	17	0.4901	0.3324	s -5.1741	s 0.0001
	YES	67	0.9183	0.1524	p -7.8581	p 0.0000
					f 4.7595	f 0.0000

Variable		N	Mean	Standard Deviation	t	Probability
RAT						
4	NO	13	0.4562	0.3527	s -4.7739	s 0.0004
	YES	70	0.9282	0.1201	p -8.9162	p 0.0000
					f 8.6191	f 0.0000
A						
1	NO	62	13.323	3.1455	s -3.0969	s 0.0027
	YES	141	14.652	1.8708	p -3.7416	p 0.0002
					f 2.8271	f 0.0000
A						
2	NO	52	14.288	2.6519	s -2.7613	s 0.0071
	YES	146	15.452	2.4860	p 2.8476	p 0.0049
					f 1.1279	f 0.5471
A						
3	NO	17	14.647	2.9142	s -0.2579	s 0.7986
	YES	67	14.851	2.8828	p -0.2596	p 0.7958
					f 1.0219	f 0.8925
A						
4	NO	13	14.692	2.3232	s -0.8325	s 0.4172
	YES	70	15.271	2.1930	p -0.8666	p 0.3887
					f 1.223	f 0.7141
CE						
2	NO	52	19.077	7.3827	s -6.4650	s 0.0000
	YES	146	26.459	6.1095	p -7.0705	p 0.0000
					f 1.4602	f 0.0848
CE						
3	NO	17	29.941	8.6130	s -5.0977	s 0.0000
	YES	67	41.313	6.4083	p -6.0742	p 0.0000
					f 1.8064	f 0.0977
CE						
4	NO	13	32.692	12.099	s -5.8086	s 0.0000
	YES	70	53.529	10.603	p -6.3659	p 0.0000
					f 1.3022	f 0.4750
CUM						
2	NO	52	1.5329	0.7362	s -6.7029	s 0.0000
	YES	146	2.3185	0.6566	p -7.1730	p 0.0000
					f 1.2572	f 0.2956

Variable		N	Mean	Standard Deviation	t	Probability
CUM 3	NO	17	1.5771	0.4376	s -6.6706	s 0.0000
	YES	67	2.3887	0.4869	p -6.2565	p 0.0000
					f 1.2386	f 0.6560
CUM 4	NO	13	1.4323	0.3834	s -0.0491	s 0.0000
	YES	70	2.3976	0.4637	p -7.0597	p 0.0000
					f 1.4627	f 0.4773
E 1	NO	52	9.145	4.4972	s -6.3587	s 0.0000
	YES	141	13.142	3.1158	p -7.3024	p 0.0000
					f 2.0832	f 0.0004
E 2	NO	52	9.165	4.6024	s -5.8519	s 0.0000
	YES	146	13.767	3.7436	p -6.4514	p 0.0000
					f 1.5115	f 0.0599
E 3	NO	17	7.294	5.2293	s -4.7866	s 0.0001
	YES	67	13.716	3.5837	p -5.9737	p 0.0000
					f 2.1293	f 0.0338
E 4	NO	13	7.154	5.8998	s -4.2072	s 0.0010
	YES	70	14.171	2.7079	p -6.8812	p 0.0000
					f 4.7470	f 0.0000
MAT	NO	33	38.000	10.621	s -1.9313	s 0.0585
	YES	80	42.150	9.793	p -1.9982	p 0.0481
					f 1.1763	f 0.5529
VER	NO	34	33.441	8.6767	s -1.3557	s 0.1797
	YES	80	35.925	0.5596	p -1.3034	p 0.1951
					f 1.2139	f 0.5427
PCT	NO	29	56.862	23.216	s -0.8207	s 0.4159
	YES	83	60.940	22.508	p -0.8331	p 0.4066
					f 1.0639	f 0.8020
CLSZ	NO	29	457.62	312.07	s 0.3296	s 0.7432
	YES	83	435.77	293.29	p 0.3397	p 0.7347
					f 1.1321	f 0.6501

C H A P T E R V

SUMMARY CONCLUSIONS AND LIMITATIONS

Summary

The main purpose of this study was to investigate the relationship between support services for minority college students and measures of success in college. The academic performance of students in the CCEBS program was examined over a two year period. The bases on which this relationship was analyzed was: 1) age, 2) sex, 3) SAT verbal and mathematics scores, 4) high school: percentile rank, high school classification and high school location: in/out of state, 5) counseling, 6) tutoring, and 7) special courses.

Subjects for this study were all minority students entering the fall semester, 1975 and the fall semester, 1976, who received financial assistance and who were on the CCEBS' list of students.

The Interactive Data Analysis Package (IDAP) statistic and computer package employed in this dissertation explored the large number of variables for determining the feasibility of predicting the academic success of minority students in this study. The statistical tests, used in the analysis of the data were frequency tables, histograms, analysis of variance and t tests. The statistical

computation procedures were supervised by a departmental (school of education) research assistant and computer programs were supervised by a computer programmer both at the University of Massachusetts.

The findings of the study are as follows:

Null Hypothesis:

There was no significant difference in the academic performance and retention of minority men and minority women. The hypothesis was rejected at the .05 level of significance, but only for the first semester.

Null Hypothesis:

There was no significant difference in the college academic performance and retention of minority students from different types of high schools. The hypothesis was not rejected at the 0.10 level of significance.

Null Hypothesis:

There was no significant difference in the college academic performance and retention of minority students from high schools located in/out of the state of Massachusetts. The hypothesis was rejected at the 0.01 level of significance.

Null Hypothesis:

There was no significant difference in the college academic performance and retention of minority students on the basis of their high school percentile rank. The

hypothesis was rejected at the 0.01 level the first semester and 0.10 the second semester.

Null Hypothesis:

There was no signficant difference in the college academic performance and retention of minority students on the basis of their high school class size. The hypothesis was not rejected at the 0.10 level of significance.

Null Hypothesis:

There was no significant difference in the the college academic performance and retention of minority students on the basis of their SAT mathematics score. The hypothesis was rejected at the 0.005 level of significance for the first semester and 0.01 for the second semester.

Null Hypothesis:

There was no difference in the college academic performance and retention of minority students on the basis of the tutoring received. The hypothesis was not rejected at the 0.10 level of signficance.

Null Hypothesis:

There was no significant difference in the college academic performance and retention of minority students on the basis of counseling. The hypothesis was not rejected at the 0.10 level of significance.

Null Hypothesis:

There is no difference in the academic performance and retention of minority students on the basis of special courses. This hypothesis could not be statistically analyzed due to lack of data.

Conclusions

College academic success is judged by the standard prediction equation, a combination of high school rank (percentile) and SAT verbal and mathematics scores, which is not meaningful for minority, special service students as compared to the white college population. It is evident that minority students can and do succeed in college, especially when their special needs are addressed, as demonstrated by the success of the CCEBS program. Although, the t test, analyses of variance, frequency and histograms show high school rank (percentile) is an important predictor of college academic success, for the special service minority students analyzed in this dissertation, the SAT verbal scores proved to be of little value as predictors, (however, the SAT mathematics scores, of males, appeared statistically significant for the first semester only).

In the first semester the females attempted fewer credits than the males, earned a smaller ratio of those

attempted credits than the males (and therefore females obviously had a lower earned number of credits), and achieved a lower grade point average than the male. However, by the fourth semester all of these trends were substantially reversed.

The data indicates that the females started out with the going much more difficult than the male but showed dramatic improvement in the academic performance over their four semester period. The data indicates it might be valuable for future research to test the statistical significance of the improvement of the grade point average and the ratio of completion for the female students over the first four semesters.

The participation in the counseling component of the CCEBS program was quite high, 95 and 93 percent, in the first two semester and moderately lower, 80 and 81 percent, in the second two semesters. The data for all semesters shows there was a marked steady decline in the number of students receiving services as the amount of services increases. However, a very interesting incident emerged with the identification of three students, in the third semester counseling grouping. They were in the second highest group receiving between 30-39.99 counseling contacts. The three major predictor variables were percentile rank, SAT verbal and mathematics scores averaged in the fifty percentile range. Despite an

expected low academic achievement average, these students attempted more credits than any other counseling grouping, while earning one hundred percent of those credits and attaining the highest average grade point average of the groupings in that semester. Therefore, in this particular case of three students, counseling had a substantially positive imput on academic performance.

The observation of the performance of these three students suggests that counseling had a much more significant impact than that reported in Chapter IV. The difficulty in making this observation more apparent over more general classes of subjects was that the data was not organized to perform the selective groupings necessary to more broadly substantiate the findings in the specific case referred to above.

A model for future analysis of the above trend would establish a composite (perhaps weighted) measures of predictor variables; SAT verbal and mathematics, and class percentile ranking. A similar composite for measures of academic success: 1) GAP, 2) credits: earned, attempted and ratio, and, 3) cumulative credits. The model would be represented by a table in which the levels of the predictor variables would be shown in the rows and the academic success measures would be indicated by values in the cells. The columns would show the levels

of counseling. The levels for the composites and counseling are designed by H, M, L, and VL for high, medium, low, and very low, respectively. If the trend suggested by the observations made of the performance of the aforementioned group of three students is indeed generalizable across all groupings of students, then we should expect to find a distribution similar to the table shown below.

TABLE

Counseling Contacts

PREDICTOR	H	M	L	VL
H	H-10	M-25	H-30	H-35
M	H-25	M-25	M-25	M-25
L	HM-25	ML-30	L-25	L-10

The table indicates that students who would be predicted to do well (by the predictor variable composite), would do so regardless of levels of counseling received. In all probability, the number of predicted high achievers would increase from high levels of counseling to low. This trend would be expected as students entering college with impressive credentials would tend to need and therefore seek less counseling. The medium level student would be moderately affected by counseling. The lower level student would be most benefited by counseling.

The number of students receiving tutoring remain consistently about 1/3 the number of those electing to remain untutored. In general, the effect of tutoring on academic performance was not significant. However, the grade point averages for both semesters were close enough to one another to suggest that the tutoring received helped those students who needed it obtain grade point averages almost as high as those who did not need tutoring.

Limitations

This dissertation contains some limitations which are inherent in this study. First, the primary interest of this study was to research the effectiveness of special service programs on the academic performance of minority students in higher education. A difficulty arose because

there was no possibility of establishing a control-comparison group, as the students involved in this study were a special service population who needed equal consideration.

There was also an unexpectedly large number of missing data on the independent variables: tutoring, counseling, and special courses. This may be due to the fact that no records were available, due to the method this researcher used to obtain certain data, and/or most importantly due to the lack of use of certain segments of the CCEBS program (such as special courses and tutoring). As a result, statistical analysis could not be made.

Careful study of this dissertation should provide future researchers information to identify ways to control these limitations and thereby measure more accurately the effects of the independent variables on the performance of a similar population.

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APPENDIX

COUNSELING EVALUATION: VALUES OF EACH ITEM

	ITEM	VALUE
1.	High School Transcript	3.75
2.	What About You?	1.5
3.	Initial Contact Form	1.75
4.	Pre-Registration Form: Summer '76/ Academic Advising	4.5
5.	Individual Counseling Forms	5.0
6.	Tutor Program Progress Report	4.25
7.	Academic Contract	5.0
8.	Course Planning Guide	4.25
9.	Pre-Registration Package/Summer Orientation: Summer '75	4.5
10.	Graduation Qualification (Cores)	5.0
11.	Incoming	3.75
12.	Outgoing	3.75
13.	1979 Communication Skills (same as #15)	3.5
14.	1980 Freshmen Survey	2.5
15.	Faculty Evaluation	4.0
16.	Communication Skills	3.5
17.	Data Sheet	1.0

COUNSELING EVALUATION

Following is a list of items that could be found in a student's folder, class of 1979. On a scale of 5 (most valuable) to 1 (least valuable), please indicate your opinion of the value to the student of each listed item which represents a counseling contact.

1. HIGH SCHOOL TRANSCRIPT

1_____
2_____
3_____
4_____
5_____

2. WHAT ABOUT YOU

1_____
2_____
3_____
4_____
5_____

3. INITIAL CONTACT FORM

1_____
2_____
3_____
4_____
5_____

4. ACADEMIC ADVISING SHEET

1_____
2_____
3_____
4_____
5_____

5. INDIVIDUAL COUNSELING FORM

1_____
2_____
3_____
4_____
5_____

6. TUTOR PROGRAM PROGRESS REPORT

1_____
2_____
3_____
4_____
5_____

7. ACADEMIC CONTRACT

1_____
2_____
3_____
4_____
5_____

8. COURSE PLANNING GUIDE

1_____
2_____
3_____
4_____
5_____

9. SUMMER ORIENTATION (SUMMER '75)

1_____
2_____
3_____
4_____
5_____

10. GRADUATION QUALIFICATION (CORES)

1_____
2_____
3_____
4_____
5_____

11. INCOMING

1_____
2_____
3_____
4_____
5_____

12. OUTGOING

1_____
2_____
3_____
4_____
5_____

13. CSC COMMUNICATION SKILLS CENTER

1_____
2_____
3_____
4_____
5_____

COUNSELING EVALUATION

Following is a list of items that could be found in a student's folder, class of 1980. On a scale of 5 (most valuable) to 1 (least valuable), please indicate your opinion of the value to the student of each listed item which represents a counseling contact.

1. HIGH SCHOOL TRANSCRIPT

1_____
2_____
3_____
4_____
5_____

2. WHAT ABOUT YOU

1_____
2_____
3_____
4_____
5_____

3. INITIAL CONTACT FORM

1_____
2_____
3_____
4_____
5_____

4. PRE-REGISTRATION FORM (SUMMER '76)

1_____
2_____
3_____
4_____
5_____

5. INDIVIDUAL COUNSELING FORM

1_____
2_____
3_____
4_____
5_____

6. TUTOR PROGRAM PROGRESS REPORT

1_____
2_____
3_____
4_____
5_____

7. ACADEMIC CONTRACT

1_____
2_____
3_____
4_____
5_____

8. COURSE PLANNING GUIDE

1_____
2_____
3_____
4_____
5_____

9. PRE-REGISTRATION PACKAGE

1_____
2_____
3_____
4_____
5_____

10. GRADUATION QUALIFICATION (CORES)

1_____
2_____
3_____
4_____
5_____

11. INCOMING

1_____
2_____
3_____
4_____
5_____

12. OUTGOING

1_____
2_____
3_____
4_____
5_____

13. FRESHMEN SURVEY

1_____
2_____
3_____
4_____
5_____

14. FACULTY EVALUATION

1_____
2_____
3_____
4_____
5_____

15. CSC COMMUNICATION SKILLS CENTER

1_____
2_____
3_____
4_____
5_____

16. DATA SHEET

1_____
2_____
3_____
4_____
5_____

HIGH SCHOOL TRANSCRIPT REQUEST

I, _____, hereby give permission to the Registrar of the University of Massachusetts to release a copy of my high school transcript to the Committee for the Collegiate Education of Black Students (CCEBS).

Signature: _____

Date: _____

WHAT ABOUT YOU?

The CCEBS staff would like to have general information about you to facilitate their "getting acquainted" with you.

Please print your answers.

1. NAME: _____
   LAST FIRST MIDDLE INITIAL

2. BIRTHDATE: _____
   MONTH DATE YEAR

3. MARITAL STATUS: _____
   MARRIED SINGLE DIVORCED/SEPARATED

4. If married, do you have dependent children?
   (YES)___(NO)____ How many dependent children?
   (Ages)_____

5. Campus or Amherst address for September, 1975, if you know what it is going to be at this time.
   _____

6. Will you be commuting from a nearby community in the Fall? (YES)____(NO)____ _____
   St. & No.
   _____
   Town Zip Code Telephone

7. If commuting, are you planning to live with parents, or relative; or will you maintain separate quarters?__
   _____

8. Do you own a car? (YES)_____(NO) _____

9. Military Service? (YES)_____(NO)_____What Branch _____ Length of time in service:
   _____

10. Do your parents and brothers or sisters live in Massachusetts? (YES)____(NO)_____ If so, where?
    (Town)_____
    If not, where? (Town) _____

11. Are you an out-of-state resident? (YES)____(NO)____
    If yes, what state? _____

12. How many brothers or sisters in your family?
    _____

13. Have any of your brothers and sisters attended college? (YES)_____(NO)_____If yes, what college?
_____

14. Do you know what percentile you graduated in from high school? (YES)_____(NO)_____If yes, what percentile? _____

15. Have you thought about a major area of study which you would like to pursue at UMass? (YES)_____(NO)____ If yes, what is it?_____

16. Did you enjoy and do well in math, algebra and geometry classes in high school? (YES)_____(NO)_____

17. Did you enjoy and do well in any of the physical sciences in high school? (YES)_____(NO)_____

18. Did you enjoy and do well in any of the biological and plant sciences? (YES)_____(NO)_____
_____Biology ____Botony _____Zoology _____Other

19. Did you study a foreign language? (YES)_____(NO)_____
If you studied language, what and how many years?
_____

20. Are you active in sports activities? (YES)_____
(NO)_____so, what sport activity? _____

21. Do you play an instrument? (YES)_____(NO)_____ If yes, what instrument?_____
Were you in any organized music groups, including school bands, etc? _____

22. What is your reason for choosing the University of Massachusetts and going to college?
_____
_____
_____
_____

INITIAL CONTACT FORM

NAME: DATE:

ADDRESS:

TELEPHONE:

MARITAL STATUS:

CLASS SCHEDULE:

MAJOR:

LIVING ARRANGEMENTS (STUDY HABITS & CONDITIONS):

FINANCIAL AID AND/OR JOB SITUATION (HOURS WORKED PER WEEK):

STUDENTS' PERCEPTION OF HIS OWN ACADEMIC WEAKNESS:

STUDENTS' TUTORIAL NEEDS:

STUDENTS' EXTRA CURRICULAR ACTIVITIES:

WHERE IS HOME? HOW OFTEN DO YOU PLAN TO VISIT?

STUDENTS' FORM OF TRANSPORTATION:

INITIAL CONTACT FORM CONT'D

STUDENTS' EXPECTATIONS OF THE UNIVERSITY (MATURITY, INDEPENDENCE, DIRECTION, ETC.).

WHICH CORE REQUIREMENTS HAVE YOU MET AND/OR WILL TAKE THIS SEMESTER?

COMMENTS:

ACADEMIC SERVICES CCEBS

INDIVIDUAL COUNSELING

Counselor_____Counselee_____

Date of Meeting _____

This meeting was at the initiative of the

Counselor _____ Counselee_____

Nature of the problem _____

_____

_____

_____

What does the counselee think should be done? _____

_____

_____

_____

_____

Nature of advice given by counselor _____

_____

_____

_____

_____

General Comments_ _____

_____

_____

Does the problem call for another meeting? _____

CCEBS TUTORING PROGRAM

PROGRESS REPORT

Date of Report: _____

Tutor: _____ Student: _____

Course: _____ Instructor: _____

Semester: Spring _____ Fall _____ Summer _____
year year year

1. General progress of the student: Good ____ Average ___

Poor____.

Comments: (Student's attitude, class attendence, assignments, etc.)

2. Faculty assessment of student:

3. Specific areas of difficulty confronting the student;

4. Grades on exams, papers or quizzes to date; identify and list:

5. Recommended steps to assist students in successfully completing course requirements; Comments:

Report reviewed by:

COURSE PLANNING GUIDE

Semester _____

Course/Title	Day/Time	Credits	Core

****

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8 - 9					
9 - 10					
10 - 11					
11 - 12					
12 - 1					
1 - 2					
2 - 3					
3 - 4					
4 - 5					
5 - 6					
6 - 7					

PRE-REGISTRATION FORM (SUMMER '76)

NAME: CLASS:

ADDRESS: (LOCAL)

TELEPHONE:

DEPARTMENT ADVISOR: MAJOR:

FALL, 1976 COURSES

Graduation Qualification (Cores)

Major Program Guide

As freshpersons, you may think that it is premature to begin planning for courses for your junior and senior year. However, if you have preferences for certain careers or life goals, courses which you choose for your first year in college may affect the number of courses you must take in your later years. Though in your freshman year you are restricted by necessary college core courses and pre-requisites, those C, D, E or foregin language requirements may be able to serve the dual purpose of fulfilling major requirements or laying the foundation for your major work. Therefore, it is not only the right time, but also necessary that you begin planning your next three and half years at the university. If you thought first semester went quickly, the next important few years will pass even faster.

College Core Requirements: _____

_____

Major Requirements: _____

_____

Also, we strongly recommend that you enter an internship program, either during you junior summer, or as one of your late junior or early senior semester. The practical experience that you will gain will not only help your application to grad/professional school or resume, but also give you insight on your own interests and working abilities.

Freshman

Sophomore

Junior

Senior

The following pages provide examples of some major programs

DATE _____

NAME: _____

I.D.# _____

ACADEMIC CONTACT

You must fulfill the following conditions:

1. CREDITS: _____

2. SEMESTER AVERAGE: _____

3. Study Hall Attendance - Four (4) days each week, three (3) hours per day.

4. UNIVERSITY CORE COURSES: _____

_____

_____

5. MAJOR COURSES:

_____ _____

_____ _____

_____ _____

6. SPRING, 1976 COURSES:

_____ _____

_____ _____

_____ _____

_____ _____

COMMENTS:

I hereby agree that failure to comply with the above conditions will result in a review and/or possible termination of my financial and academic status with the Committee for Collegiate Education of Black Students Program.

_____
STUDENT'S SIGNATURE

_____
ACADEMIC ADVISOR

_____
ASSISTANT DIRECTOR FOR
ACADEMIC SERVICES

CAREER/LIFE AND COURSE PLANNING GUIDE
WITH PRE-REGISTRATION PACKAGE

This booklet is designed to assist you in clarifying and determining your educational objectives. Also, it provides information concerning pre-registration for Spring 1977 and course planning guides. Since pre-registration begins in less than one week, you must be prepared to make informed decisions on what courses you want to take and in which way they relate to your future goals.

To help you make these assessments, we have included a career and life planning guide which you must complete and place in your academic folder. Also included is a course progress form which indicates your grades to date and a self-evaluation. In addition, guides for developing an outline of courses for your entire college career, together with recommended programs have been enclosed to aid you in putting Spring semester in prospective to your total four years. Lastly, to inform you on the academic regulation of pre-registration, a general information sheet has been included, along with a course planning guide for Spring semester. It would be most helpful to bring all these completed forms with you when we meet during pre-registration week.

A list of the enclosed forms is this:

1) career and life planning guide
2) course progress form
3) major program guide
4) pre-registration information and requirements
5) course planning guide for Spring semester

Please read and complete each form carefully, and pay particular attention to the pre-registration information. If you do not follow these regulations you could be penalized $5.00 for late fees or even need to apply for readmission. This booklet has been designed to purposely inform you of these rules and to adequately prepare for the decisions you need to make.

Also, CCEBS will be holding pre-Career Day workshops on November 18 on the 2nd floor Lounge of New Africa House to assist students in preparing for interviews and writing resumes. If you plan to apply for any Spring or Summer jobs which may require a formal application, now is the time to get some help from individuals specially skilled in the subject. Also, November 23 is Career Day on which prospective employers will be at the Campus Center to inform and recruit college seniors and graduates.

Internships at particular companies will be discussed and if you have a slight interest, you should attend these events. Though it may be too early for your working permanently in these companies, it would be a good opportunity to learn what the job possibilities are when you do graduate. Your participation is more than welcomed.

CAREER AND LIFE PLANNING GUIDE

NAME _____ TEL. _____

ADDRESS _____
Street City State Zip

STUDENT CLASSIFICATION _____ MAJOR _____ MINOR _____

DATE OF GRADUATION _____ HIGHEST DEGREE OBTAINED _____

CUM GRADE POINT AVERAGE _____ PRESENT DEGREE STATUS _____

CAREER PREFERENCE _____

RATIONALE FOR CHOICE _____

_____

_____

LIST THE REQUIREMENTS FOR THIS MAJOR _____

_____

HOW DO YOU PROPOSE TO ATTAIN THESE GOALS BOTH IMMEDIATE, INTERMEDIATE AND LONG RANGE? _____

_____

_____

DO YOU POSSESS THE COMPETENCE FOR THIS FIELD? _____

_____

WHAT PERSONAL DEMANDS WILL BE MADE ON YOU, AND HOW DO YOU PROPOSE TO MEET THSE DEMANDS?

_____

_____

_____

DO YOU HAVE AN AREA PREFERENCE. IF SO WHAT? _____

_____

HOW MUCH FORMAL EDUCATION IS REQUIRED? _____

_____

HOW MUCH JOB RELATED EXPERIENCE IS REQUIRED?_____

_____

HOW MUCH EXPOSURE HAVE YOU HAD IN THE FIELD? _____

_____

WHAT SALARY RANGE DO YOU ANTICIPATE?

STARTING $_____

MAXIMUM $_____

HOW LONG DO YOU ANTICIPATE TAKING TO REACH YOUR GOAL?_____

_____

WHAT IS YOUR PROGRESS TO DATE?_____

_____

ARE YOU SATISFIED WITH THE PROGRESS MADE TO DATE_____

_____

IF NOT HOW DO YOU PROPOSE TO ACCELERATE?_____

_____

IS THERE A RELATIONSHIP BETWEEN THE COURSES YOU ARE PRESENTLY TAKING AND THE CAREER YOU ARE PURSUING?_____

_____

IF YOU ARE AN UNDERGRADUATE, DO YOU PLAN TO ENTER GRADUATE SCHOOL?_____

IF SO, WHAT IS YOUR SCHOOL PREFERENCE?

A.
B.
C.
D.

HAVE YOU REQUESTED INFORMATION FROM THESE SCHOOLS CONCERNING YOUR CAREER PREFERENCE?_____

_____

WHAT ARE THEIR PREREQUISITIES?_____

_____

WHAT PREPARATION ARE YOU PRESENTLY MAKING TO MEET THESE REQUISITES? _____

WHAT IS YOUR ACADEMIC PREFERENCE? _____

WHAT IS YOUR ALTERNATIVE CAREER PREFERENCE_____

_____

PERSONAL ASSESSMENT:

STRENGTHS_____

_____

_____

DEFICIENCIES_____

_____

_____

IN WHAT WAY DOES THESE SKILLS, ENHANCE, IMPEDE YOUR CAREER LIFE GOALS?_____

_____

_____

DO YOU ENJOY WORKING WITH PEOPLE?_____

DO YOU ENJOY CHALLENGES?_____

DO YOU ENJOY ROUTINE?_____

DO YOU ENJOY WORKING WITH FIGURES?_____

DO YOU ENJOY ADMINISTRATIVE FUNCTIONS?_____

HOW WELL DO YOU HANDLE RESPONSIBILITY?_____

ARE YOU MORE COMFORTABLE AS A LEADER, OR A FOLLOWER?_____

_____

WHY?_____

_____

_____

GIVE A SUMMARY BY TIME SEQUENCE OF YOUR CAREER LIFE PLAN

_____

_____

_____

_____

Please return completed from to:

CCEBS
New Africa House
University of Massachusetts at Amherst

Mid-Term Faculty Evaluation

of _____

in _____

(Please circle the appropriate response)

Attendance

# of classes missed 1 2 3 4 5±

unknown

Class Participation

A B C D F

unknown

Quiz Grades (if any) 1 2 3 4 5 6

Test Grades (if any) 1 2 3 4

Papers (if any) 1 2 3 4 5 6

Grade to Date A AB B BC C

CD D F UNDETERMINED

Comments and Recommendations

Please add any additional notes concerning the student's progress so that we can further assist the student in his/her studies. Thank you.